MEASURING STRESS AND COPING STRATEGIES OF EXECUTIVES IN INDIAN COAL INDUSTRY

ABSTRACT
THESIS

SUBMITTED FOR THE AWARD OF THE DEGREE OF

Ph. D. (Business Administration)

BY

HERDEO PRASAD
(Reg. No. - EE - 5123)

Under the Guidance of

Dr. Parvaiz Talib
Reader
Department of Business Administration
Aligarh Muslim University, Aligarh
(Internal Advisor)

Dr. Pramod Pathak
Associate Professor
Department of Management Studies
Indian School of Mines, Dhanbad
(External Advisor)

DEPARTMENT OF BUSINESS ADMINISTRATION
FACULTY OF MANAGEMENT STUDIES AND RESEARCH
ALIGARH MUSLIM UNIVERSITY
ALIGARH (INDIA)

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ABSTRACT

Stress is a condition in which an individual is confronted with an environmental demand related to him and he perceives the outcome as uncertain but important. This uncertainty is a cause for anxiety that usually leads to stress. A widely agreed upon definition of stress is that of Selye (1956) who has defined it as any critical event or any internal drive, which threatens to upset the organism's equilibrium. It was Hans Selye who introduced the concept of stress in life sciences for the first time in 1936. The term is now being widely used in relation to work organizations.

Economies depends on industries that achieve results through organisation of men led by executives. And if these executives are bogged down by their own stress, results will not be achieved. It is the performance, effective perfomance, of these executives that is important for growth and development of organisation, industries and nations. Whatever can impair this, has to be handled effectively. Growing stress awareness in the field of management is thus in tune with time. There is a library of evidence to prove the linkage of stress and performance.

Coal India limited is the largest public sector of Indian Coal Indusry. It accounts for 87.73 percent of total coal production in the country. The Department of coal in the Ministry of Energy, Government of India has been entrusted with the responsibility of the development and exploitation of coal and lignite. The corporate body managing for development and exploitation of coal and lignite namely Coal India limited and Neyveli Lignite Corporation respectively are under direct control of the Department of Coal Present study is pocussed on executives of Bharat Coking coal Limited (BCCL), Dhanbad a subsidiary of Coal India Limited. BCCL employs 2254 executives of different grades/ranks working in 21 different specialisations to achieve common mission of

the organisation. Entire BCCL mines have been grouped in 12 areas for effective administrative conrol.

This study aims to understand the nature and causes of role stress in Indian coal industry executives. It then wishes to propose suitable remedial measures. Specifically, the study aims at: Exploring differences, if any, in the nature and intensity of stress among executives in the Indian Coal Industry vis-a-vis other industry professionals, across education level, across hierarchical level, across age group, across type of work place i.e. underground mines (U/G) and open cast project mines (OCP) and length of service. In addition it seeks to propose remedial measures to handle the stess.

Different Null Hypotheses were framed in line with of aforementioned objectives 0there is no difference in the nature and intensity of stress among Coal Industry executives vis-a-vis professionals belonging to other occupational groups, different education level, different hierarchical leve, different age group, different type of work place i.e. underground mines (U/G) and open cast project mines (OCP) and length of service. In addition to above hypothesis, the study also worked on the proposition i.e., executives are using varying strategies to cope with stress

Total population of exectives working in Coal India Limited is 15,850 (approx), and population of executives working in twelve areas of BCCL, Dhanbad is 2254. The study initially included 300 coal Industry executives working in all twelve areas of BCCL. Sample selected for all twelve areas was around 10 to 12 percent of the population. The ORS questionnaire and Role PICS Instruments were distributed to 300 exectives working in twelve areas of BCCL. Out of 300 set of questionnaire, only 262 correct responses were received that was, therefore, the sample size of this study. There may be a number of reasons for incorrect / poor responses ranging from difficulty in understanding the terms in part of questionnaire to unwillingness to disclose

true feelings. The data so collected has been subject to analysis. It has been grouped together in terms of various demographic and other relevant variables.

The analysis of results revealed that none of the respondents fall in the high stress category on the overall organizational stress score. Among individual stressors, substantial numbers of executive reported high stress on the account of Role Erosion, Inter Role Distance and Personal Inadequacy. However, it is worth noting that a majority of employees have reported medium level of stress on Role Erosion and Role Isolation. This study reported difference in the nature and intensity of stress among executives of coal industry. In common parlance, it has been an established fact that if a problem remains unattended for a long time then it might get converted into a severe one. Not only intensity and quantum of stress but also time duration is significant factor for worsening the stressful situation. Organizations in this sector must take note of the conventional wisdom that 'prevention is better than cure'. It is time to take remedial steps to prevent such executives moving in to higher stress group which may lead to burnout. Therefore, there is difference in the nature and intensity of stress has been found.

The study revealed the fact that the nature of stress among public sector was somewhat similar. However, when these results were compared with other sectors or occupational group, a different picture emerges. The nature and quantum of stress in various occupational groups was at variance.

Employees with lower education background were found to be under-greater stress than their counterparts. Role Erosion was the most powerful stressor for executives not having high educational background. Score on Role Erosion was highest for respondents having lower education. Role Expectation Conflict, Role Isolation, Self

Role Distance and Resource Inadeqacy were other significant stressors. This indicates that less educated executives were found to be under more stress and their score on Role Erosen was more than their counterparts.

Executives at lower levels experienced more stress than those at higher managerial levels.Among individual stressors, Role Erosion and Role Isolation were the significant stressors. Analysis on the basis of hierachy revealed no significant difference on Overall Role Stress, as the mean score on ORS for lower management and middle management were almost found to be similar. Top management scored relatively low on overall ORS Score.

The higher the age of respondents the lower the overall ORS scores, younger executives scored high on overall ORS, while older executives reported comparatively low score on overall ORS. Results established that there were significant differences for total ORS scores for respondents belonging to different age profile. Role Stagnation, Personal Inadequacy and Self Role Distance emerged as significant stressor for respondents of different age profile.

Under-ground mine executives reported higher level of stress than open cast project mine executives on total ORS scores. Stressors like Inter Role Distance, Role Erosion, Personal Inadequacy and Self Role Distance were found having significant differences between these two groups of respondents.

Length in terms of year of service is inversely related to overall ORS score.Stressors like Personal Inadequacy and Role Ambiguity have shown significant differences for executives having varying length of service.

As stated in our objectives one of the aim of this study was proposing remedial measures

for the executives working in coal industry so that they can handle their stress effectively. In order to achieve this objective, the first step was to explore how the executives presently handle their stress, as this could form the basis of effective stress management. A standardized psychological tool was administered to find out how coal industry executives cope with the stress. Role PICS developed by Udai Pareek was used as the tool for measuring ORS in this study. The data obtained through Role PICS was qualitative in nature. It was subjected to content analysis for interpretation.

At the first stage, the distribution of respondent across eight coping styles was carried for all the 24 situations presented in the questionnaire. At the second level, distribution of these eight coping styles was assessed across eight role stressors. Further, this data was also analysed by ascertain the preponderance of a each coping styles to find out how often a particular coping style has been used by the respondents. This distribution was also analysed across eight role stressors. Analysis indicates that 89 respondent out of 262 appear using avoidance strategies 'D' to handle various role stressors.

Further, distribution between avoidance and approach styles appear quite even for most role stressors. However, in case of role isolation, self-role distance and inter-role conflict avoidance style is more frequently used by the respondents.

There are two levels at which the management of stress is taken-up in any organization. At the individual level the executives try to manage stress personally. This effort on the part of an executive to manage stress at individual level is called coping. The second and, perhaps more important level is the effort of the organization to manage stress among its executives. These organizational efforts are called 'organizational interventions' or 'stress management interventions'. Both coping and organizational interventions are equally important for the successful management of stress in any organizational setting.

The major conclusion is that organisations need to emphasize managing stress on a more greater scale. The organisation should exhibit concern for their executives in both on and off the job matters. This concern may go a long way in making the executive effective and by extension, the organisaion more effective. As no managerial system is perfect, stress will ever remain. The best course is to cope with it, head-on. And it can be achieved, with some effort, some training. Further, growing competition and demand of coal may lead to more challenges for executives in future and stress management intervention may be a timely step.

Indian coal industry is in a state of change. This study has been carried out after 12 years of the opening up of coal industry for the private sector. It may be pertinent to reassess the intensity of stress during the phase of emergence of private sector participations in coal industry. This shall help future researchers to compare and understand this phenomenon at the different stages of privatization of coal industry. In future, executives may face even more job stress due to intensity of privatization of coal industry. Coal industry has been liberalized for more than 12 years. Further, researcher on coal industry may be carried out on both sectors i.e. Public and private sectors. This may provide a comparative understanding of work stress in private vis-à-vis public sector of the coal indusry.

Understanding the causes of a problem is one aspect and another aspect, perhaps most important, is the management of stress. Management of stress is not that well researched area. A number of researchers are working in this field in western countries and there is need to unearth relevant approaches for handling this problem in different geographical/occupational settings. Studies on management of stress in different organizational settings in the same industry as well as across the industry are the need of the hour.

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ALIGARH (INDIA)

2007

Dr. Parvaiz Talib
Reader

DEPARTMENT OF BUSINESS ADMINISTRATION
Aligarh Muslim University, Aligarh
Phone : 0571-2400262 (R) 09412274252

Certificate

*This is to certify that the thesis entitled "**MEASURING STRESS AND COPING STRATEGIES OF EXECUTIVES IN INDIAN COAL INDUSTRY**" submitted to the **Aligarh Muslim University** in partial fulfilment of the requirements for the award of the **Degree of Ph.D. (Business Administration)** is a record of original work done by **Mr. HERDEO PRASAD** during the period of his study in the Department of Business Administration, Faculty of Management Studies & Research, Aligarh Muslim University, Aligarh, under my supervision and guidance and the thesis was not formed the basis for the award of any Degree/Diploma/ Associateship/Fellowship or similar title to any candidate of any University.*

Dr. PARVAIZ TALIB
Internal Advisor

Dr. Pramod Pathak
Associate Professor

Deptt. of Management Studies
Indian School of Mines - Dhanbad
Ph : 0326 - 2302222 (R)
Mob : 9334009001

CERTIFICATE

This is to certify that thesis entitled "MEASURING STRESS AND COPING STRATEGIES OF EXECUTIVES IN INDIAN COAL INDUSTRY" submitted to the Aligarh Muslim University in partial fulfilment of the requirements for the award of the Degree of Ph.D. (Business Administration) is a record of original research work done by Mr. HERDEO PRASAD during the period of his study in the Department of Management studies & Research, Aligarh Muslim University, - Aligarh, under my Supervision and guidance and the thesis has not formed the basis for the award of any Degree/Diploma/Associateship/Fellowship or Similar title to any Candidate of any University.

Indian School of Mines - Dhanbad

DR. PRAMOD PATHAK
External Advisor

Declaration

I, hereby, declare that the thesis entitled **"MEASURING STRESS AND COPING STRATEGIES OF EXECUTIVES IN INDIAN COAL INDUSTRY"** submitted to the Faculty of Mangement Studies and Research, Aligarh Muslim University, Aligarh for the award of the degree of **Ph.D. (BUSINESS ADMINISTRATION),** is a record of original work done by me during December 2002 to December 2006, under the Supervision and guidance of **Dr. PARVAIZ TALIB** (Internal Advisor), Reader, Faculty of Management Studies and Research, **Aligarh Muslim University, Aligarh** and **Dr. PRAMOD PATHAK** (External Advisor) Associate Professor, Department of Management Studies, Indian School of Mines, Dhanbad and it has not previously formed the basis for the award of any Degree, Diploma, Associateship or other Similar title to any Candidate of any University

Herdeo Prasad

(HERDEO PRASAD)

Dhanbad

Signature of the candidate

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Herdeo Prasad

Herdeo Prasad

Dedicated

I dedicate this work to my **parents,** my wife **Dr. (Mrs.) Sarwamangala Prasad,** daughter **Harshita** and son **Sarvesh**. Their inspiration, love and support has made this work possible.

Herdeo Prasad

Herdeo Prasad

Preface

Modern Society depends for its functioning if not for its survival, on the effectiveness of large scale organisations, on their performance and results, on their values, standards and self-demands. And this is largely dependent on executive effectiveness. As Drucker has said, only executive effectiveness can enable this society to harmonize its two needs, the needs of organisation to obtain from individual the contribution it needs, and the need of the individual to have organisation serve as his tool for the accoplishment of his purpose. It is the achievement of this harmony that is the cruial test of management practice and on which the effectiveness of organisation depends.

But it is a difficult proposition. Executives, who play the pivotal role in making organisations effective, face a myriad of demands, at times at variance with one another. They have to adjust to these demands which require serious efforts, some times stretching their response capabilities beyond the elastic limit, thus causing stress. This stress, called differently as job stress or occupational stress, in a major problem today for organisations, having serious implications for executives and by extension organisational health. It is the management of this stress that holds the key to organisational effectiveness.

In the present study we have tried to measure occupational stress and coping strategies as perceived by the executives of Indian Coal Industry.

The study is devided into seven chapters. The first chapter gives a general introduction of the subject under study and a discussion on the basic concepts

involved. The second chapter gives a detailed profile of Indian Coal Industry.

The third chapter gives a detailed review of the related literature with a view to throw light onthe complexities of the subject. In the fourth chapter the research methodology has been described in detail stating the rational for the research, its objectives, the hypotheses and the measures adopted for data collectiion. The fifth chapter gives details about the results and discussion of the study. In the sixth chapter discussion on management of Stress is given elaborately. The seventh chapter gives the highlights, conclusion and future directions.

Though all possible attempts have been taken to make the study operationally relevent, yet we acknowledge the limitations, both temporal and materials, that may underdo its generalisability. However, enough care has been exercised to see that extraneous variables do not creep in, thus maintaining validity of the findings.

Hardeo Prasad

Hardeo Prasad

Abbreviations

APP	:	Approach Coping Style
AV	:	Avoidance Coping Style
AMU	:	Aligarh Muslim University
ATC	:	Air Traffic Controller
BCCL	:	Bharat Coking Coal Limited
BIT	:	Birsa Institute of Technology, Sindri
BOD	:	Board of Directors
CIL	:	Coal India Limite
CMRI	:	Central Mine Research Insitutes, Dhanbad
CFRI	:	Central Fuel Research Institute, Dhanbad
CRO	:	Colliery Recruitment Organisation
CMAL	:	Coal Mines Authority Limited
CMPDIL	:	Coal Mines Planning and Design Institute India Limited, Ranchi
CRPF	:	Central Reserve Police Force
CCL	:	Central Coalfield Limited, Ranchi
CMD	:	Chairman-cum-managing Director
CGM	:	Cheif General Manager
DGMS	:	Director General of Mines Safety, Dhanbad
DVC	:	Damodar Valley Corporation, Kolkata
DSP	:	Deputy Superintendent of Police
ET	:	Economic Times
ECL	:	Eastern Coalfield Limited, Asansol
E&M	:	Electrical and Mechanical
EAP	:	Employee Assistance Programme
GM	:	General Manager
GAS	:	General Adoptation Syndrome
HRD	:	Human Resorce Development
HSG	:	High Stress Group

HOD	:	Head of Department
ISM	:	Indian School of Mines, Dhanbad
IT	:	Information Technology
IISCO	:	Indian Iron and Steel Company
IED	:	Industrial Engineering Department
ISO	:	Internal Safety Organisation
ICAR	:	Indian Council of Agricultural Research
IRD	:	Inter Role Distance
LAS	:	Local Adaptation Syndrome
LSG	:	Low Stress Group
MCL	:	Mahanadi Coalfiled Limited, Orissa
NCL	:	Northern Coalfield Limited, Singraulli (M.P.)
NEC	:	North Eastern Coalfields, Assam
NCDC	:	National Coal Development Corporation
OCP	:	Open Cast Project Mines
ORS	:	Organisational Role Stress
PAC	:	Provincial Arms Constabulary
PI	:	Personal Inadequacy
PICS	:	Projective Instrument for Coping Stretigies
QWL	:	Quality of Work Life Scale
RA	:	Role Ambiguity
RE	:	Role Erosion

CHAPTER - 1

Stress An Introduction

Stress-An Introduction

1.1 The Backdrop

Stress is a condition in which an individual is confronted with an environmental demand related to him and he perceives the outcome as uncertain but important. This uncertainty is a cause for anxiety that usually leads to stress. A widely agreed upon definition of stress is that of Selye (1956) who has defined it as any critical event or any internal drive, which threatens to upset the organism's equilibrium. It was Hans Selye who introduced the concept of stress in life sciences for the first time in 1936. The term is now being widely used in relation to work organizations.

Stress is an old concept and its mention can be found even in the vedic literature in the form of "Dukha" (Grief) and "Dushchinta" (anxiety). The phenomenon is old and pervades the human life right from the birth to death. A human being encounters threats of various kinds in his life. He tries to neutralise this stress as it disrupts the equilibrium. As one can not live with continuous stress various coping mechanism are resorted to which help in changing perceptions and attitudes and diminishing the impact of stress. In the prehistoric age, stress was there due to factors like threats of wild animals, natural calamities, climatic dangers, inter group conflicts for searching foods and living resources etc. In the present era, human beings are under stress due to reasons like nuclear threat, political & economic uncertainty, regionalism, communalism, economic and political crises, urbanization, threat of war, unemployment, poverty and job insecurity.

The Present age is the age of science and technology. It is also the age of anxiety and stress. A historical background of stress is needed in order to understand how changes in time have impacted the nature and effect of stress. In prehistoric days mother nature was the source of all stress as the human settlements were not organized and had to

depend on vagaries of nature. With progress of science and technology this changed and human beings could manage to face nature with greater confidence. However, other stressors replaced nature. Wars and conflicts for power became source of stress. With the emergence of industrial society new forms of stressors replaced the earlier ones. Rather, they were added to the list of already existing ones.

In the more recent past i.e. 20th century we have seen an enormous change in the nature of society and work place. With the advent of mass production in the early 20th century, the nature of society and work place changed. People had to cope with technology as well as nature.

The period of 1960's was characterized as "the decade of leisure". It was followed by "industrial conflict decade" of 1970's. This decade witnessed conflict between management and workers. Then, coming after the industrial relations turmoil of 1970's, leading to "enterprise culture" of the 1980's. This is also called the decade of privatization, merger, and joint ventures. It improved economic competitiveness of developing countries in international market through globalization. However, its result has also been 'Stress' and 'Burnout' of employees at workplace. The early 1990's have been dominated by phenomenal increase in world's economy. A notable feature of this phase has been growing demand of I.T. enabled services. Now technology and increasing automation of industry can lead to simplification of work and repetitive jobs that are potentially stressful in terms of workload (Martin & Wall 1989). The main features of these changes are downsizing and flattened organizational structure rather than pyramidcal ones. This period has also brought a shift from rigid work force to flexible work force. As employment pattern undergoes a change, permanent jobs give way to short term contracts leading to greater insecurity. The changes witnessed in last 50 years have created newer problems for society and organizations. All the problems highlighted above contribute to and account for the phenomenon of stress in organizations and society as a whole.

1.2 Concept of Stress

Origin of the term stress lies in the latin word "stringere" (Edworthy, 2000). The term stress was used earlier to denote a stimulus (a force or pressure that causes distress) and response to that stimulus (Adversity, affliction) Keefe (1988). As the word stress is derived from the latin word 'stringere' which means to draw tight, it was first used in the 17th century to describe hardship or affliction. In the late 18th century, stress denoted "force, pressure, strain or strong effort," referring primarily to an individual or to an individual's organs or mental powers (Hinkle, 1973)

However the term 'stress' and 'strain' are used synonymously in a non-scientific fashion. The popularity of the stress concept has dwindled in the physiological field, where it first started, and the use of stress terminology continued to flourish in the psychological and social fields. Now the term stress has come into wide use in relation to work organisations (Agarwala, Malhan and Singh, 1979).

Cooper and Marshall (1976) identified seven categories of stress. Six external and one internal to the managers' concern. These are :

1 Factors intrinsic to job (too much or too little work, poor working conditions and time pressure etc.)

2 Role in organisation (role ambiguity, no participation in decision making etc.)

3 Career development (under or over promotion, job insecurity etc.)

4 Organisational interface (Company vs. family demands, company vs. own interests)

5 Organisational structure (restriction on behaviour, office politics etc.)

6 Relations within organisation (poor relationship with boss, peers and subordinates)

7 Individual Manager (Personality, ability to cope with change and behavioural pattern).

Beehr (1988) has also defined stress, stressors and strain in order to establish a difference among them.

Stress : The overall transactional process

Stressors : The events or properties of events (Stimuli) that are encountered by individuals.

Strain : The individuals psychological , physical and behavioural responses to stressors.

Outcomes : The consequences of strain at both the individual and organisational level.

Stressors, thus, are the antecedent conditions and strain is person's response (s) to those conditions. Beehr's conception suggests that the term 'stress' may not be used to describe specific elements of the transmission between the individual and his or her environment but rather to denote the over all process incorporating stressors, strains and coping responses (Cooper et al, 2001).

Finemann (1979) views stress as "a psychological response state of negative effect, characterized by a persistent and high level of experienced anxiety or tension".

The term stress has also been defined as both as independent and dependent variable (Cox, 1985). As a 'process' the stress has been defined on the basis of a stimulus-based model (Stress as the "independent" variable) or a response-based model (Stress as the "dependent" variable). Stress has also been defined as "a stimulus, a response or the result of an interaction between the two, with the interaction described in terms of some imbalance between the person and environment" (Cox, 1978). Stress has also being defined as "the result of transaction between the person and environment" (Lazarus, 1990). Selye, on the other hand has defined stress as "non-specific response of the body to any demand mode upon it" (Selye, 1956). These definitions focus on the dynamic relationship of the person and the environment and how stress may get generated as a result.

Person-Environment (P-E) fit model suggests that strain occurs when the relationship between the person and environment reaches a state of disequilibrium. Thus, there is a lack of fit between the characteristics of the person (e.g. abilities, values) and the environment (e.g. demands) which can lead to mismatch needs or demands (Edword & Cooper, 1988) as indicated in figure 1.1. Similarly, three hypothetical shapes of the relationship between PE fit and strain curves B and C can also be drawn as their mirror images to depict functions which are their respective reverse opposites as shown in figure 1.2.

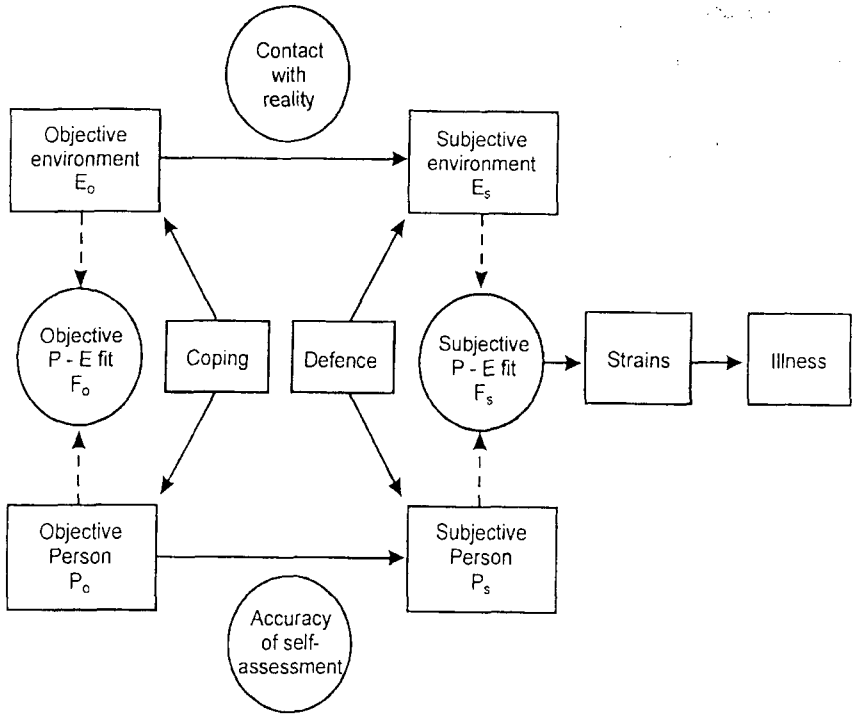
There is need to integrate stimulus and response definitions within overall conceptual frame work and acknowledge the dynamic linkages between all elements of the stress process (Cooper, 2001). According to cooper, the use of the term "stress as a dynamic process has created confusion among researchers in the field of social science research. It need to be noted that stress has been defined and operationalised in numerous ways. This variety of definition is due to the application of the term in medical, engineering and social science research. However, all definitions have used essentially similar terms such as misfit, mismatch, imbalance etc. to define stress.

1.3 Sources of Stress

The stressors are associated with the performance of specific tasks that make up an individual's job. Sometimes referred to as task content factors as well as work environment and work scheduling factors (Kahn & Byosiere, 1990). This may include variables such as the level of job complexity, the variety of tasks performed, the amount of discretion and control that individuals have over the pace and timing of their work, and the physical environment in which the work is performed. Following are the some of job stressors.

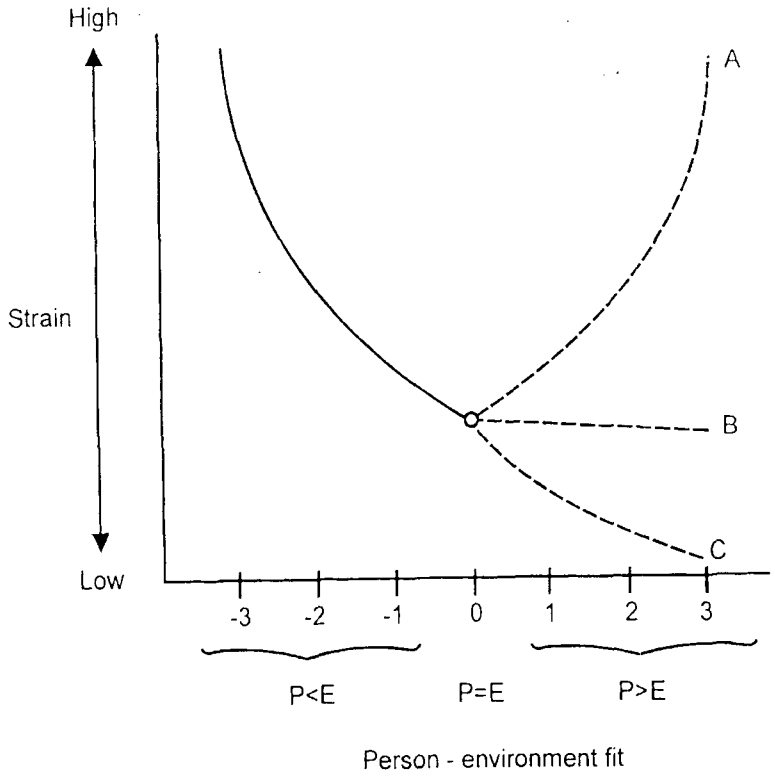
Noise: Certain kinds of sounds (for instance language and music) enrich people's lives and unwanted sound is referred to as noise (Cooper, 2001). A change of noise levels

Figure 1.1 : Person Environment (P-E) fit model



Source: Cooper, 1983.

Figure - 1.2 : Person Environment (P-E) fit curves



Source: Cooper, 1983.

can also be potentially more stressful than absolute noise level. Workers exposed to high noise level have been found to be more susceptible to allergies and respiratory and cardiovascular disorders (Jones, 1983).

Temperature: Temperature is another attribute of the physical environment that can have significant impact on workers. In cold environment manual dexterity is reduced and may cause accidents due to reduced sensitivity, slowed movement. In addition, florescent lighting can be tiring and any illumination that is too dim or too bright may cause eye strain. It can also cause fatigue.

Workload: Workload is said to occur when the quantity of work expected (output) is at variance with a person's perception of how much he/she can handle efficiently. This overload has the potential of lowering the workers self-esteem because of their own perceived inefficiency. It is interesting that the Japanese have a word devoted to the issue, *Karoshi*, which means death from overwork. It was officially recognized as a fatal disease in Japan in 1987 (Edworthy, 2000).

Career Development: Career issues can act as a sources of stress. These include job insecurity, over promotion and under promotion, the change in demand of managers and apprehension of downsizing and attempts to reduce levels of management within organizations. Many individuals are face of with the threat of losing their jobs. In the new millennium job insecurity may be one of the single most major sources of stress for employees at all organizational levels (Cooper, 2001, p-45). Cole, (1993) observed that downsizing may result in a loss of organizational "memory" and sharing of knowledge across departments and organizational levels, disruption of routines that have been built over time. Usually promotion is deemed to be a positive tool for one's career development. But it may sometimes, create problem for an employee who does not want promotion because he or she is not mentally prepared for shouldering additional or new responsibilities. Both under and over promotion can have serious effects on

individual well-being and satisfaction level.

Working Hours: The sheer number of hours or change in work schedule can produce considerable strain. In a technology driven service industry like communication industry, there is 24 hours working schedule divided in shifts. Considerable evidence in there to show that shift workers feel stressed, primarily because disturbances in circadian rhythms (the body clock) and disruptions to family and social life (Folkard, 1996). Another form of alternative work schedule that has received some attention recently is the compressed shift schedule. Some organizations have extended their working hours from 8 to 12 hours per day to enhance their productivity and avoid extra manpower. Long working hours can create conflict and resentment at home and affect the quality of time spent with family.

Effects of stress on bodily functions. Job factors or situations also cause stress. Effects of the stress on bodily functions are of various types like brain, mood, saliva, muscles, heart, lungs, stomach, bowels, bladder, sexual organs, skin and biochemistry etc. Detail effects of above bodily functions in different situations like normal, under pressure, acute pressure and chronic pressure (stress) of an individual during work have been indicated in table 1.1.

Dynamics of work stress. Sources of stress like intrinsic to the job, role in the organization relationships at work, career development, organizational structure and climate and other factors have impact on individuals which causes individual symptoms and organizational symptoms. Work place stress can be managed by an individual or organization or both. The details of the same are presented in figure 1.3.

Table - 1.1 : Effects of Stress on Bodily Functions

	 *Normal (relaxed)*	 *Under Pressure*	 *Acute Pressure*	 *Chromic Pressure (stress)*
Brain	Blood supply normal	Blood supply up	Thinks more clearly	Headaches and migraines, tremors and nervous tics
Mood	Happy	Serious	Increased concentration	Anxiety, loss of sense of humor
Sallva	Normal	Reduced	Reduced	Dry mouth, lump in throat
Muscles	Blood supply normal	Blood supply up	Improved performance	Muscular tension and pain
Heart	Normal heart rate and blood pressure	Increased heart rate and blood pressure	Improved performance	Hypertension and chest pain
Lunge	Normal respiration	Increase respiration rate	Improved performance	Coughs and asthma
Stomach	Normal blood supply and acid secretion	Reduced blood supply increased acid secretion	Reduced blood supply reduces digestion	Ulcers due to heartburn and indigestion
Bowels	Normal	Reduced blood supply increased bowel activity	Reduced blood supply reduces digestion	Abdominal pain and diarthes
Bladder	Normal	Frequent urination	Frequent urination due to increased nervous stimulation	Frequent urination, prostatic symptoms
Sexual Organs	(M) Normal (F) Normal periods, etc.	(M) Impotence (decreased blood supply) (F)Irregular periods	Decreased blood supply	(M) Impotence (F) Menstrual disorders
Skin	Healthy	Decreased blood supply, dry skin	Decreased blood supply	Dryness and rashes
Biochemistry	Normal oxygen consumed, glucose and fats liberated	Oxygen consumption up, glucose and fat consumption up	Decreased blood supply	Dryness and rashes

Source: Melhuish, 1978

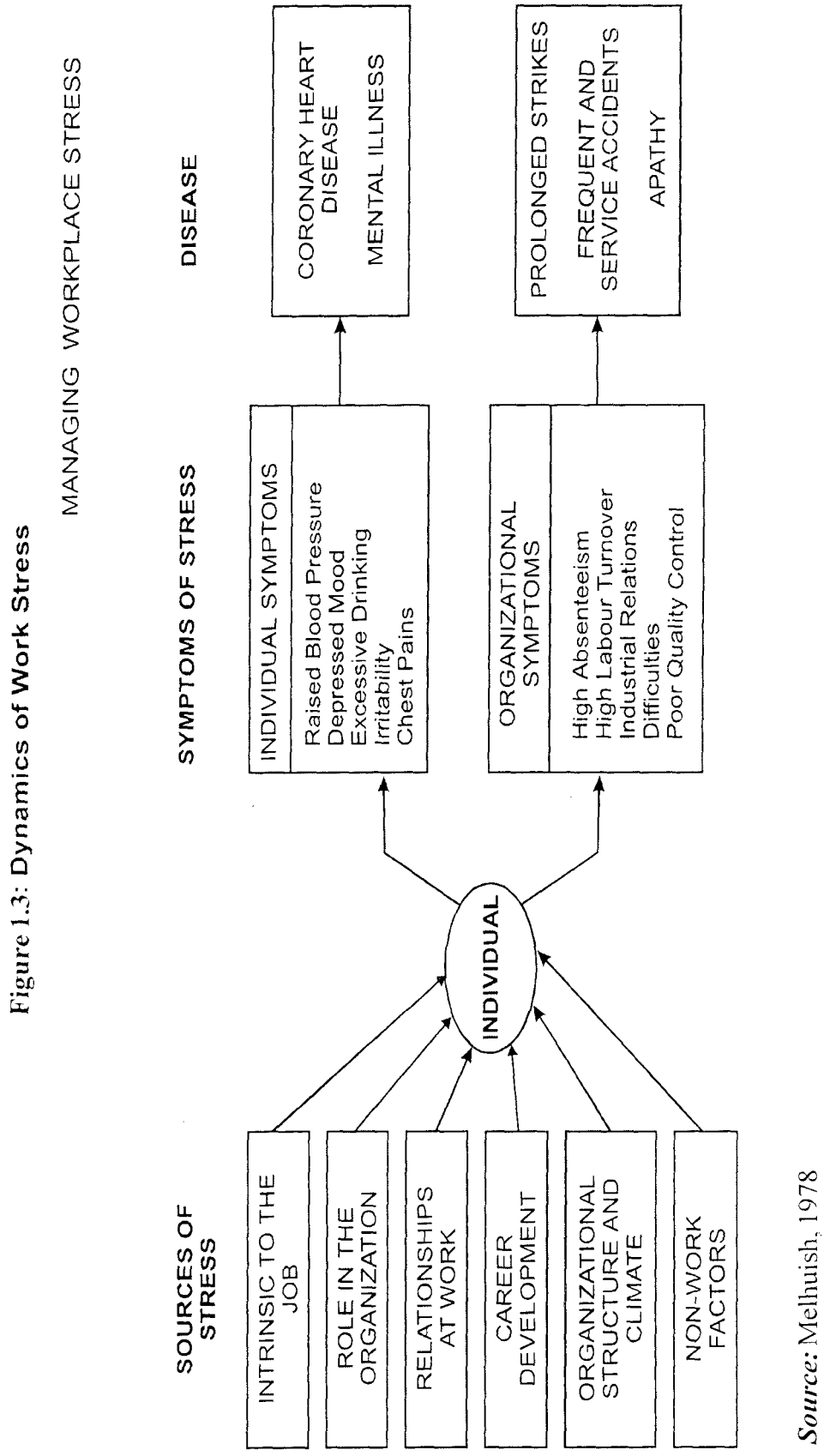


Figure 1.3: Dynamics of Work Stress

Source: Melhuish, 1978

1.4 Approaches to Stress

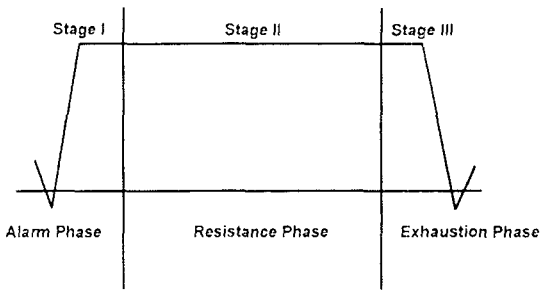
There are various approaches to understand stress. The four major approaches are briefly discussed below:

1.4.1 Physiological approach

When a body copes with stress a typical response pattern is observable which Selye (1956) has termed as General Adaptation Syndrome (GAS). It comprises three stages; (a) Alarm reaction, (b) Stage of resistance, (c) Stage of exhaustion

Alarm Reaction. The organism's reaction when it is suddenly exposed to diverse stimuli to which it is not adapted. Selye suggested the term alarm reaction for this initial response as it represented a general call to arms of the body's defensive forces. The reaction has two phases, namely, the shock phase, which is the initial and immediate reaction to the noxious agent and the counter shock phase, which is a rebound reaction marked by the mobilization of defensive phase. (Most of the acute stress diseases correspond to these two phases of the alarm reaction). The alarm reaction, however, is evidently not the entire response. No organism can remain continuously in a state of alarm. If the agent is so drastic that continued exposure becomes incompatible with life, the animal dies during the alarm reaction within the first hours or days. If it survives, this initial reaction is necessarily followed by the stage of resistance. (Fig. 1.4)

Figure 1.4 : Stage of resistance



Source: Selye, 1956

Stage of Resistance. This stage is primarily on endocrinal metabolic phase. The principal mediator of the cortical phase is cortical released from the adrenal cortex. The cortical protects the organism not from the stressor but from the normal defensive reactions of the organism. That can cause significant collateral damage of the organics. There normal defenses include secretion (release) of lymphocytes, pyrogens, prostaglandin's and other mediators of inflammatory response. Cortisol acts to inhibit the effects of these chemicals. Other effects of cortisol include, electrolyte balance, protein metabolism, effects on central neurotransmission, distribution of body fat and glucose metabolism (Clothiner, 1977).

Stage of Exhaustion. Since adaptability is finite, exhaustion inexorably follows, if the stressor is sufficiently severe and prolonged. Symptoms reappear and if stress continues unabated, death is caused. It is imperative to point out that the body's adaptability, or adaptation energy is finite since, under constant stress, exhaustion eventually ensues. It is still not known precisely what is lost except that not merely caloric energy, since food intake is normal during the stage of resistance. Hence, one would think that once adaptation has occurred and ample energy is available, resistance should go on indefinitely. But just as any inanimate machine gradually wears out, so does the human machine, sooner or later, become the victim of constant 'wear and tear.

After exhaustion from stressful activity, sleep and rest can restore resistance and adaptability very close to previous levels but complete restoration is probably impossible. Every biological activity causes wear and tear, it leaves some irreversible chemical scars which accumulate to constitute the signs of ageing. Thus adaptability should be exercised with caution.

1.4.2. Engineering Approach

Based on Hook's law of elasticity, this approach relates 'stress' and 'strain'. The low stress is experienced if the strain, produced by given element of stress, falls within the

'elastic limit' of the material. The materials returns to its original state when element of stress is removed. If strain passes beyond the elastic limit of the material some permanent damage is likely to occur. The same process mechanism can occur in the case of human beings under stress. Just as various elements have different elastic properties, individuals, too, have different levels of resistance. If the level of strain goes beyond the individual's tolerance level, permanent physiological or psychological damage is likely to occur (Edworthy, 2000).

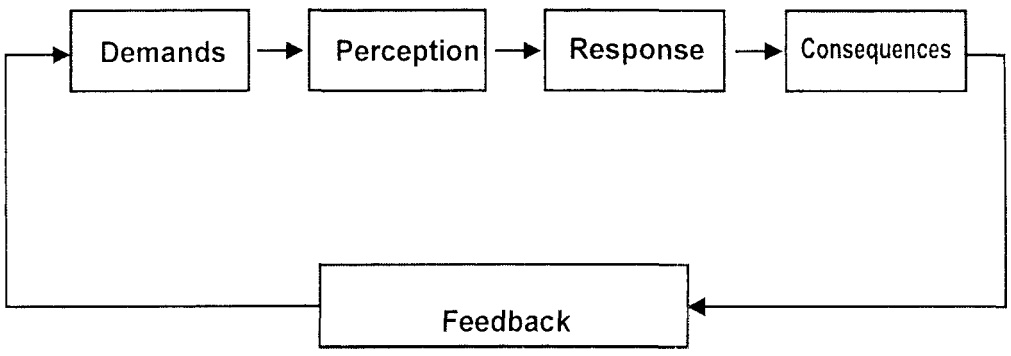
1.4.3 Psychological Approach

This approach is based on the interaction of the person and the environment. For example; individuals exhibit different types of responses during stressful situation. Lazarus (1966) deliberates on the importance of the individual's ability to appraise and react to the situation. So appraisal plays an important role in the psychological approach.

1.4.4 The Transactional Approach

This approach views stress as an individual's perceptual phenomenon. It arises when there is imbalance between demand as estimated by the individual and their perceived ability to cope with demand. These imbalances give rise to the experience of stress (Edworthy, 2000). (Figure 1.5)

Figure 1.5 : Steps in Transactional Model



Source : *Cox and Macky, 1981*

Cox and MacKay (1981) outline five stages in their transactional model.

- The first stage is represented by the demands being made on the individual.
- The second stage concerns the individuals perception of the demands.
- The response an individual makes to overcome stress are seen as the third stage of the model.
- The growth stage concerns the consequences of the coping responses are. both actual and perceived consequences are seen as important.
- Feedback is the final stage.

1.5 Types of Stress

The term stress is normally used in a negative sense. The fact is that not all stress is inherently destructive or bad. In fact some level of stress is not only inevitable but also desirable. Each individual requires a moderate amount of stress to keep oneself alert and work effectively. It is harmful only when it crosses a desired level. This desired level may differ from person to person. There are two major types of stress. First one is "eustress" and the other one is "distress"

- **Eustress :** This term indicates, level of stress that is good and necessary for an individual for achieving excellence in work.
- **Distress :** Sometimes eustress may turn into distress. It is distress that is cause of worry for individuals and organizations.

1.6 Stress, Health and Cost

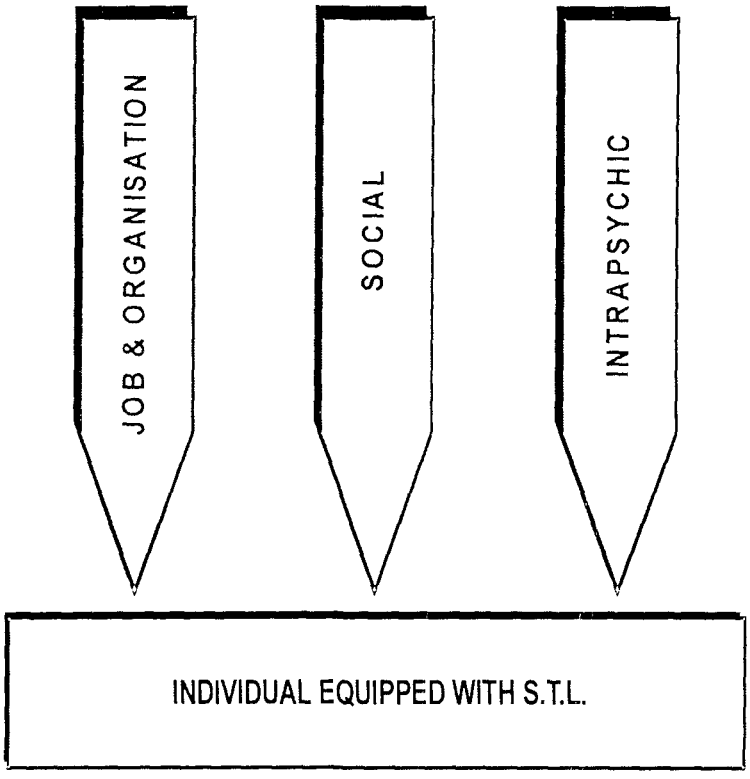
Health and stress links are well established. Chronic stress is harmful for individuals and organization as well. Stress may be responsible for many physical ailments. Some of these are hypertension, coronary heart disease, migraine headaches, peptic ulcers, arthritis, colitis, diarrhea, asthma, sexual problems, muscle tension, allergies, backache and cancer (Greenberg, 1993).

Organizations, too, bear consequences of employees' bad health in the form of absenteeism, higher medical costs, staff turnover and low productivity. The far-reaching impact of occupational stress can be assessed from data available for some other countries. It is estimated that stress costs US industry over $ 150 billion a year through absenteeism and low productivity (Karasek & Theorell, 1990).

1.7 Characteristics and Effects of Stress

According to Pestonjee (1983), there are three important sectors of life in which stress originates. These are job and organizational sector, the social sector and intrapsychic sector. This aspect is graphically depicted in figure 1.6a to 1.6e. Job and organization sector includes totality of the work environment (task, atmosphere, colleagues, compensations, policies etc). The social sector refers to the socio-cultural context of one's life. It may include religion, caste, language, and other such factors. The intrapsychic sector encompasses those things, which are intimate and personal like temperament, values, abilities and health.

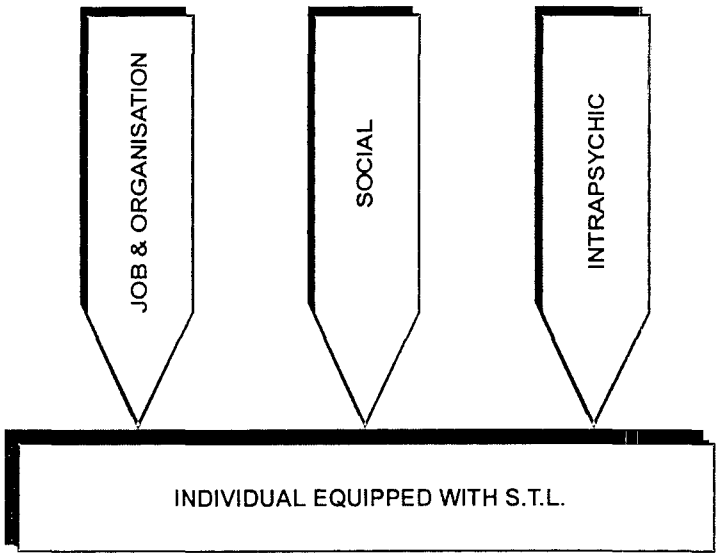
Figure 1.6a : Model of Stress Tolerance Limit



Source: Pestonjee, 1983

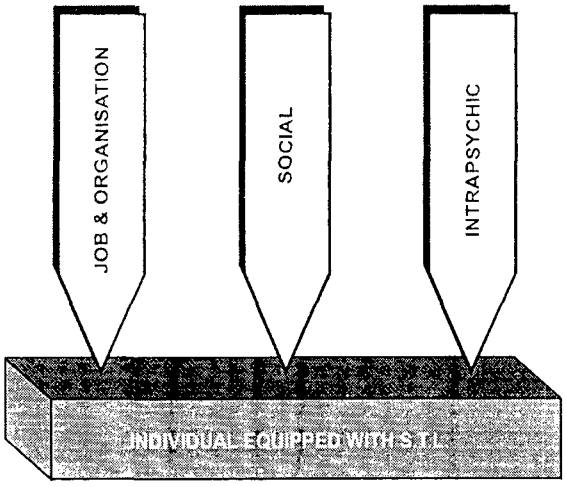
Organisation - Individual
Normal Interaction Pattern

Figure 1.6b : Model of Stress Tolerance Limit



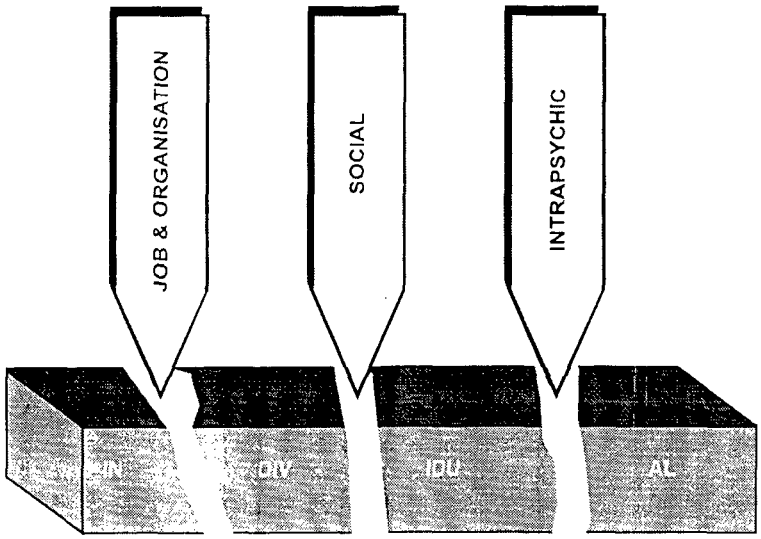
Minor Surface changes
Adaptation Attempt
A. Extra Effort
B. Excesive concern about task
C. Worries
D. Anxiety

Figure 1.6c : Model of Stress Tolerance Limit



Major Surface Disfiguration
Frantic Coping
A. Extraordinary effort
B. Worry and anxiety effort
C. Onset of psychological symptoms
D. Aggressive tendencies

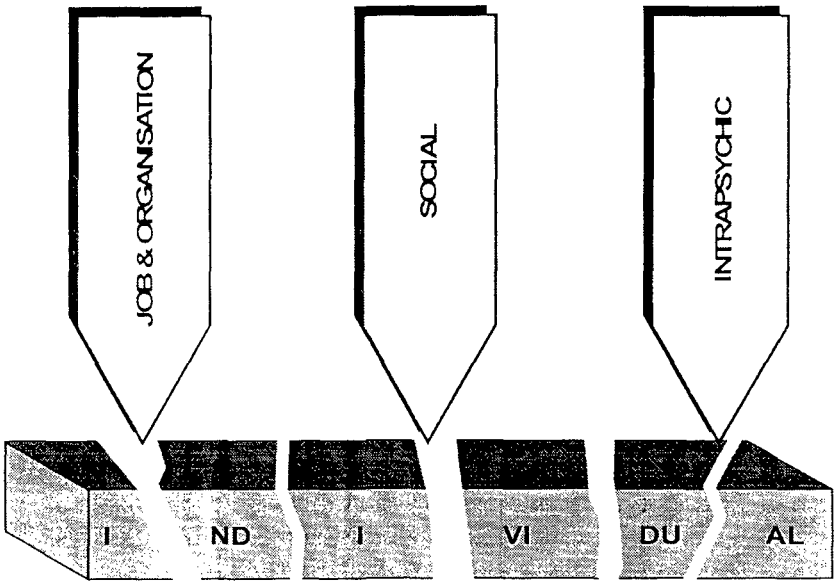
Figure 1.6d : Model of Stress Tolerance Limit



Breakdown and cracks
Failure in Coping

A. Work related symptoms
B. Psycholgical Symptoms
C. Psychological symptoms

Figure 1.6e : Model of Stress Tolerance Limit



Disintegration or falling apart
Dissociative Personality

A. Somnambulism
B. Multiple Personality
C. Feeling and thought disturbance
D. The stage of medical or psychological help

Source : Pestonjee, 1983

1.8 The Indian Concept

The modern view of stress is slightly different from the traditional Indian view as given in *Carak Samhita, Patanjali's Yogasutra* and *Bhagwat gita.* Yet, some concepts developed by ancient Indian scholars can be related to the contemporary view of stress. Some examples are *dukha* (pain, misery or suffering), *klesha* (Affliction), *kama* or *trishna* (desire), *atman* and *ahamkar* (Self and ego), *adhi* (mental aberrations) and *prajnaparadha* (failure or lapse or consciousness) (Pestonjee, 1999). These are either causes or manifestation of stress.

The *samakhya-yoga* says that the fundamental non-cognition, which leads to phenomenological stress, is avidya (Ignorance). Avidya leads to asmita (self-appraisal), namely, those concerning the self. The object and the threat are used for reality testing. The faulty evaluation can produce stress and torment. The samakhya system postulates that the feeling of dukha or stress is experienced by the individual in the course of his/her interaction with the world around him/her. In this system we find three types of stress: personal (adhyatmink), situational (adhihibodhik) and environmental (adhedevik). The system of yoga is analytical and helps the individual in understanding his own stresses while helping him identify the roots of these stresses.

Romas and Sharma (1995) have described ancient Indian concept through four level of stressors:

- **Prosupta (Dormant Stressors)** Any mental process is potentially stressful like any seed that has the potential to germinate into a sapling.
- **Tonu (Tenuous or Weak Stressors)** Stressors of insufficient intensity and urgency, which are kept under check are more powerful stressors.
- **Vichmica (Intercepted Stressors)** These stressors are alternate between stages of dormancy and manifestation.

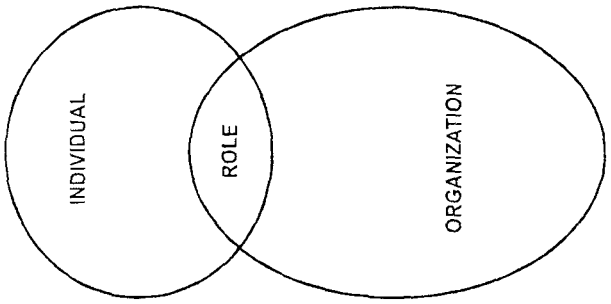
- **Udara (Operative Stressors)** These stressors are found during a course of action as a permanent behaviour.

The concept and application of ancient Indian concept of stress is suitable to Indian environment. Indian people still have belief in traditional Indian cultural values. Thus there is utility of traditional Indian coping practices for managing work stress.

1.9 Organizational Role Stress

1.9.1 Role is a set of obligations generated by the 'significant' others and individual occupying an office. It denotes set of functions one performs in response to the expectations of the 'significant, others, and one's own expectations from that position or office (Pareek. 1993, p-3).

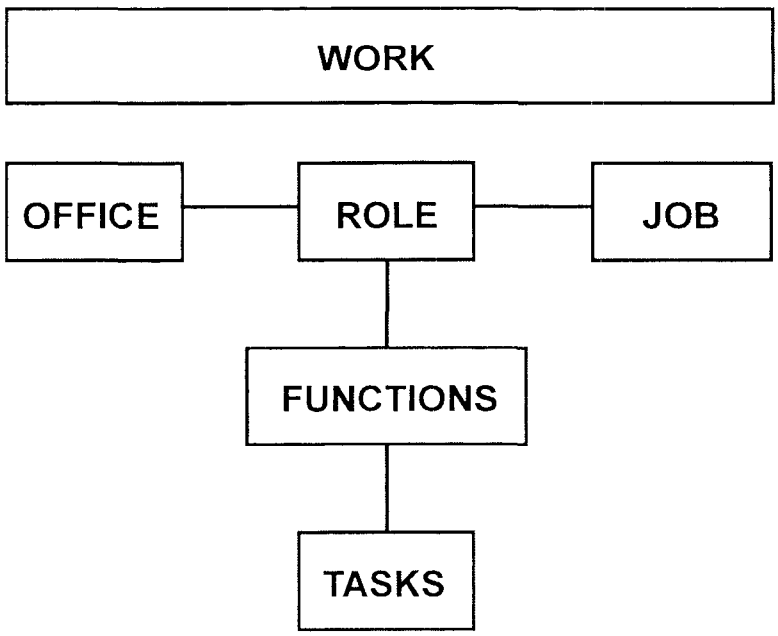
Figure 1.7 : Role as an Interacting Region between an Organization and the Individual



Source : Pareek, 1993

Organization and individual have different types of needs. Organization has its structure and goals while the individual has his/her personality and needs.

Figure 1.8 : Some work - Related Terms



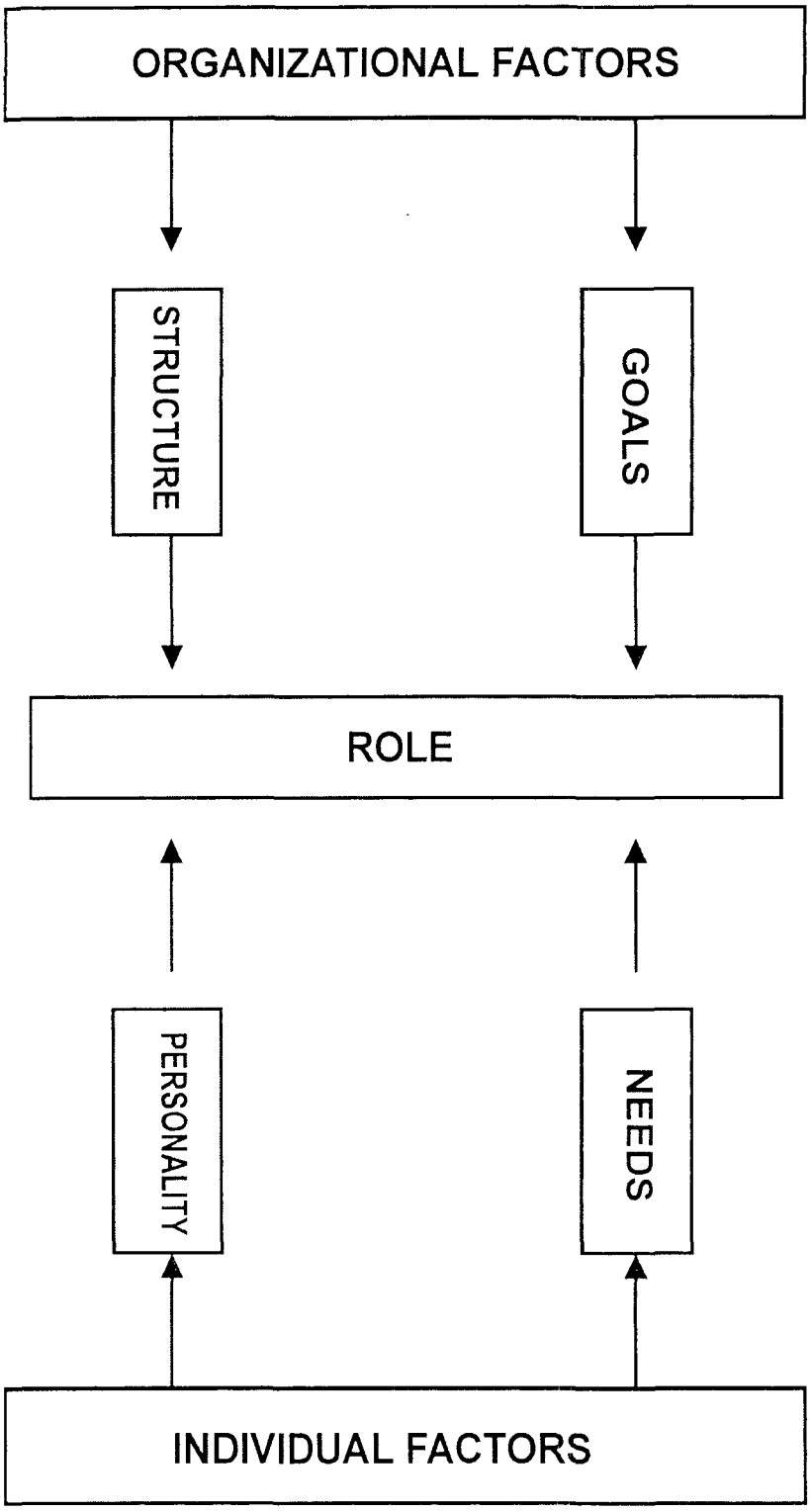
Source: Pareek, 1993

The interaction between two gets integrated in a role. Figures 1.7, Figure 1.8 and Figure 1.9 show the relationship between role, organization and Individual.

Another related concept is **Office** which is a relational and power centred concept. Role on the other hand is an 'obligational' concept. Office is a point in the social structure defining an office holder's power. The role is an integrated act of behaviours expected from a person occupying the office. (Pareek, 1993 p-4) For example, the Indian mother, occupies a significant position in the family structure and has different obligations with different family members. In other words, she has to play multiple roles.

Katz and Kahn (1966) have used the concept of role to explain the process of role taking. Role taking involves both role sending (by the 'significant' others) and role receiving (by the role occupant), Interaction between role senders and role occupant influence the role behaviour of the individual.

Figure- 1.9 : Role and Organization & Individual factors



Source: Pareek, 1993

1.9.2 Role Systems An organization can be defined as a system of roles. However, each role itself is a system. For an individual, there are two role systems. The various roles which the individual carries and performs and the various roles of which his role is a part. The former is the role space and later, the role set. The role space conflict arises when other roles creates difficulty for the existing role. This leads to discomfort between existing role and other roles set. Conflict arises when present role responsibilities either decrease or increase. Role set conflict may be called as intra role conflict.

Thus, the role is a very useful concept in understanding the dynamism of the integration of an individual with a social system. It also helps in understanding the problem which arise in the individual-organization interaction and integration (Pareek, 1993), PP. 13-14.

The concept of role widens the meaning of work and relationship of the worker with other significant persons in the system. The concept of the job is more prescriptive in nature and includes the more discretionary parts of work. A job is more specific in nature and assumes relationships of the worker regarding his duties. Role on the other hand, emphasizes his/her relationship with all those who have expectation from him.

1.9.3 Organizational Role Stress : Stress is an inevitable outcome of socio-economic complexity, and to some extent, it is a stimulant, too. In the overall context, organizations are closely linked with work settings having numerous systems like production, finance, marketing, administration. In addition to macro organizational sub-systems like inter organizational system, organizational goals, strategies, climates, cultures, structures, management styles and performance. These systems are accountable for the growth of the organization and its role incumbents on the one hand, and society at large on the other. Many a times, the human being in the system is reduced to a mere insignificant cog in the wheel of total technological setup. This tends

to generate feelings of powerlessness, meaninglessness, normlessness, and consequent stress. (Pestonjee, 1999.p-87). The concept of role and the related concepts of role space and role set have a built in potential for conflict and stress. (Pareek, 1993)

There are following ten role stressors under two sub categories

1.9.3.a Role Space Conflict

- **Inter Role Distance :** Stress occurs when the linkages of organizational roles become weak. An individual usually occupies more than one role. There may be conflicts between these roles.

- **Self-Role Distance :** When a role provides its occupant with less opportunities for using his special strengths, its efficiency is likely to be lowest. This is called self-role distance. For example, an introvert who is clerk in an office may develop a self-role distance if he/she accepts the role of a salesman in an organization. He comes to realize that expectations from the role would include him/her meeting people and being social.

- **Role Stagnation :** This is a situation appears when an individual who have occupied a role for a long time enters another role in which he/she may feel less secure. Lack of systematic HR development is responsible for this stress.

1.9.3.b Role Set Conflict

- **Role Ambiguity:** When the individual is not clear about the various expectations that people have from his/her role, the conflict that he/she faces is called role ambiguity. Role ambiguity may be in relation to the activities, responsibilities, priorities, norms, or general expectations. Generally role ambiguity may be experienced by person occupying roles, which are newly created in the organization, role in organizations, which are undergoing change, or process role (with less clear and concentrate activities).

- **Role Expectation Conflict :** When there are conflicting expectation or demands by different role senders (persons having expectation from the role), the role occupant

may experience subordinates, peers or clients.

- **Role Overload :** When the role occupant feels that there are too many expectations from the 'significant' other in his/her role set, he/she experiences role overload. Time limit is the main factor for this stress.

Role overload is more likely to occur where role occupants lack power. Where there are large variations in and when delegation or assistance can not procure more time.

- **Role Erosion:** A role occupant may feel that the functions, which he/she would like to perform, are being performed by some other role. The stress felt may be called role erosion. For example, two new roles are placed in place of one existing role may cause stress in form of role erosion,

- **Resource Inadequacy:** This type of stress appears when the resources required by the role occupant for performing the role effectively are not available; these may be information, people, material, finance, or facilities.

- **Personal Inadequacy:** feeling of lack of confidence or not prepared to undertake the role effectively, he/she may experience this stress. Persons who are assigned new roles without enough preparation or orientation are likely to experience this type of stress.

- **Role Isolation:** when a role occupant feels that certain roles are psychologically closer to him, while others are at much greater distance. The main criterion of distance is the frequency and ease of interaction. When linkages are strong, the role isolation will be low and in the absence of strong linkages, the role isolation will be high. The gap between the desired and the existing linkages will indicate the amount of role isolation.

The discussion presented in this chapter leads to the inevitable inference that stress is a inseparable to human beings. Its intensity and spread differs from time to time,

place-to-place, organization-to-organization and more importantly individual-to-individual. This study has explored this phenomenon in the context of Indian Coal Industry. The next chapter explains history, structure, significance, nature and human resource practices of the Indian Coal Industry.

CHAPTER – 2

Indian Coal Industry A Profile

Indian Coal Industry - A Profile

Coal is a vital source of energy for industrial as well as domestic consumers. Development of Coal Industry is, therefore, basic to the realization of national energy programme. Because of that, development of the Industry is one of the cornerstone of India's "Five Year Plans". There have been attempts to develop alternate sources of energy besides coal like, furnace oil, hydro-electric power and nuclear fuel. Yet, coal continues to enjoy the dominant position even now in the energy sector all over the world. It has been often called 'potential dynamo' as it predominates directly or indirectly each and every phase of our daily life.

2.1 Origin and growth

Coal has been known in India since time immemorial. Archaeological evidence indicates that coal was being used in our country during ancient time i.e. around (2000 B.C). The first published reference to the mining of coal in India dates back to 1774, when permission to work on coal in mines in Bengal was granted by Warren Hasting to two East India Company employees viz. John Summer and Suetonis Grant Heatley.

Mr. Rupert Jones a British company employee reported the presence of coal seams (natural layer of coal deposition) near Raniganj in the year 1814. The first successful mining attempts were initiated by Messers Kar & Tagore who were predecessors of the Bengal Coal Company. The next attempt was made by 1815 in Raniganj coalfield which was a successful. Later, in 1830, several coal mine started operating in Raniganj Coalfield. But the rate of progress of the Industry was slow due to less developed transport facilities and paucity of demand of coal for industrial uses. The systematic geological surveys of the coal field were undertaken during 1845-60. Extension of East Indian Railway to Burrakur coal area in 1865 did relieve some collieries of their transport problems. These developments gave an impetus to the industry. As a result, a number of joint stock companies, mostly European, came to existence. By 1860

nearly 50 collieries were producing about 2,82,000 tones of coal per annum in the Raniganj Coalfield. **Ghosh, (1973)** In 1958, the development of Jharia Coalfield started at a big scale. Coal mining was started in the central provinces also in 1862. The Singareni Coalfields of Hyderabad went into production around 1887. Similarly, the development of coal mining in upper Assam commenced in 1881. In Punjab and Bluchistan, the work started in the last decade of 19th century. At the turn of the century, India had achieved a total production of 6 million with Coalfields such as Bokaro, Punch and Chanda Valley.

The growth and expansion of coal industry is linked to the industrial activity. Opening of cotton, jute and other factories as well as expansion of Railways accelerated opening of new coalfields. In 1900, the total production was about 6.1 million tonnes as against 1 million tonnes in 1880. In 1914, India produced 16 million tonnes of coal per annum of which Jharia and Raniganj coalfields contributed around 90% of the output. The Industry witnessed difficult days during world depression in early 1930's. During this period, though production trend was maintained, the smaller coal mines were struggling hard for their survival. Slaughter and selected mining was reported at large scale during this period. The advent of electricity, innovation of bar coal cutting machines gave a further fillip to coal industry. There was unprecedented demand for coal due to "First World War". The production rose to 21 million tonnes in 1918. Increase of demand for coking coal for steel works, opening of new coke plants and popular use of coal as a domestic fuel further increased production, which was recorded at 219 million tonnes, in 1940. However, a portion of this increased output was contributed by opening up of many small mines producing inferior coals. The period of 1942-45 was again a sluggish one. This period witnessed a sudden fall of production, caused by outmoded equipments, scarcity of labour during wartime and lack of proper transport facilities. To meet this situation, the Colliery Control Order (1944) was passed to impose control over the prices of coal as also on

its production and distribution. An oppressive system of forced labour was introduced by the mine owners with the support of the British Government. Colliery Recruitment Organisation (C.R.O) was introduced as a special arrangement to ensure procurement of labour.

After independence, the need for larger and efficient production of coal was stressed in the Five Year plan. Coal being vital energy source, it was considered necessary to expedite the exploitation and modernization of coal industry. By 1947, there were 902 mines employing 3.22 lakhs of workers and producing about 27 million tonnes of coal. In view of the basic importance of coal as a fuel for variety of industries, as raw material for steel plants and, of late, as a crucial source of energy, the coal mining industry received considerable attention in the successive plans. Production of 39 million tonnes of coal was envisaged by the end of First Five Year plan. But the coal produced annually reached 38.23 million tonnes of coal by the end of 1955-56, which amounted to 98% of the target. Even though coal and lignite were included under schedule "A" industries in the industrial policy resolution 1956, Government considered allowing Private Coal Mining Industry to grow. However, this was not strictly adhered to and efforts were made to develop Railway owned mines. Government policy was to utilise Railway owned collieries as the base and to develop new coal mines particularly in the outlying fields.

During Second Five Year Plan, more ambitious target for coal production was set. It was planned to step up the coal production to 60 million tonnes by the end of the Second Five Year plan from 39.28 million tonnes of coal at the end of the First Five Year Plan. It was also felt that the private sector alone would not be able to achieve higher target of coal production. As a result, the organized Public Sector, National Coal Development Corporation (NCDC), came into existence in the year 1956, with the collieries belonging to the railway forming the nucleus. Some new mines were also being opened. The NCDC was entrusted with responsibility of developing outlying coalfields. Coal production rose upto 55.72 million tonnes achieving 92.8% of the

targets. In every plan, thereafter the share of Public Sector in coal production gradually increased.

The situation during Third Five Year Plan was different. There was a decrease in demand from the major coal consuming sectors like Steel, Power etc. Due to constraints of resources, the fixed target of 97.32 million tonnes was realised only to an extent of 69.6%.

After the Third Year Plan and during yearly plans of 66-67, 67-68, the production rose but fell again by 68-69, and remained stagnant at around 70 million tonnes per year till nationalisation of coal mines. Most of the collieries except that of N.C.D.C. and Singreni were under private ownership. It was observed that they were extracting coal in an unscientific manner without any regard for conservation of this depleting national asset. The Fuel Policy Committee predicted a heavy demand in future for coal in view of the rapid expansion of the industries. In view of that, it was felt that the production was to be geared up within a very short time, which called for heavy capital investment. The private sector was not coming forward for this. Hence, the option of nationalisation was actively being considered. The private sector coal mines had also defaulted in the payment of the royalty and cess to the government, besides failing to deposit provident fund dues of the employees. Some of them even failed to pay wages and bonus in time. The working condition were also far from satisfactory. These factors contributed to nationalisation of Coal Industry in India.

Certain problem were rampant in Private Sector of Coal Industry. It was characterised by ruthless exploitation of labour. There was non-implementation of Wage Board Award and an unwillingness to honour labour laws. The recommendations of Coal Wage Board accepted in 1967 after years of deliberations, were implemented in not more than 10% of the Private Collieries.

Working of Coalfields Recruiting Organisation (C.R.O.) perpetuated a system of

bonded labour. The employers were reluctant to give up the system that worked to their advantage. Large-scale manipulation of records to deprive workers from various statutory benefits were also common features. Violations of safety provisions were widespread. Mine ventilation was poor and roof supports were often inadequate. Various technical Committees viz. the Coalfields Committee, Burrows Committee, Mahindra Committee, Estimates Committee of the lok Sabha of 1954-56, Mehta Committee, therefore, directly or indirectly argued for nationalisation of coal industry. Nationalisation of coal industries in non-socialist countries like France, Great Britain had also influenced the thinking of the Indian planners. The national Trade Unions has also launched persistent campaign for a take over.

2.2 Nationalisation of Indian Coal Industry

Specifically, Nationalisation of Coal Industry was resorted to due to following reasons :

- The reserves of coking coal were limited. These reserves required careful exploitation in the long-term interest of the economy.
- The mining of coking coal in most of the private sector was being done in a wasteful manner. There were incidence of indiscriminate slaughter mining.
- The efforts initiated by Government of India to amalgamate small mining units with larger units had not succeeded.
- Overall functioning of coking coal mines was expected to result in serious damage to the mines and reserves.

The proposals for nationalisation of coal mines had been in the air since 1956. But due to various reasons and vacillations on the part of Government the proposals remained dormant. However after the mid term poll of 1971 that returned Congress Party to power with a thumping majority, things moved towards nationalisation of coal mines at a faster pace.

Before the formal announcement of the take over of the management of the coking coal mines through a Presidential ordinance which actually came on 17th October, 1971, Mr. Kumarmangalam, the then minister of Coal steel and mines, in the course of his address at a Seminar highlighted the following problems of coking coal mines:

- existence of very large number of unscientifically planned small sized mines, engaged in slaughter mining.
- Poor per capita output
- Shortage of capital
- exploitative mining by private owners
- Absence of long term planning for development of resources so as to ensure the development of Steel Industry.

It was argued that coking coal reserves might exhaust fast if something was not done to check exploitative mining. As a first step, the coking coal mines in Jharia and Rajganj Coalfields were taken over through a Presidential Ordinance promulgated on 17th October 1971. Subsequently they were nationalised on 1st May 1972.

The production and planning of Coking Coal Mines under Jharia Coalfield was entrusted to Bharat Cocking Coal Limited. Since then this company is managing the entire resources of Prime Coking Coal spread over the area of Jharia Coalfields which is spread over 49 Square kilometre of land, out of which approximately 25.8 Sq K.m. is under operations. A composite plan, which included amalgamation of collieries into viable units and merger of boundaries to avoid loss of coal in barrier. The only coking coal mines which remained in private sector were the captive mines of Tata Iron and Steel Company. In May 1973 non-coking coal mines were nationalised. Initially, Bharat Cocking coal Limited, worked as the subsidiary of Steel Authority of India Limited (SAIL) under the administrative control of Department of Steel till formation of new

department of Coal under ministry of Energy in October, 1974. The Company was placed under direct administrative control of the Department of Coal w.e.f. 26.2.1975.

2.3 Product Profile

The coal is a natural product, which is mined from its natural location. It is produced and graded based on ash content and heat value. Low grade coal is washed at the washeries.

Nature of product There is a wide difference in varieties of coal mined even from same geographical location. Its Gradation is done on the basis of useful heat value (UHV) and ash percentage.

Type of Coal

- Peat
- Lignite
- Bituminuous
- Anthracite

Coking Coal

This variety has better coking property and is preferably used for metallurgical purpose. This coal is also used for manufacturing of hard coke. Main demand for this type of coal comes from steel plants that are either supplied directly or after washing depending on the ash content of raw coal. Coking coal is divided into following categories.

- Prime coking coal
- Medium coking coal
- Semi coking coal

Coking coal is further categorized in eight grades according to their ash percentage

- Steel grade I
- Steel grade II

- Washery grade I
- Washery grade II
- Washery grade III
- Washery grade IV
- Semi coking grade I
- Semi coking grade II

Steel grade I & II termed as direct feed coal used by steel plants in hard coke manufacturing unit at their end, directly. Steel plants use washed coal of Washeries Grade I & II. Steel plants do not use coals of Grade III & IV. These are used in chemical industries.

Non Coking Coal This variety has poor coking property and more ash percentage hence these are unsuitable for the steel plants. This variety can be used as domestic, soft coke, power house, cement industry, fertilizer industry, loco etc.

Soft coke Soft coke is manufactured from steam coal. Large Stocks of steam Coal are collected and allowed to burn till smoke is eliminated. After the completion of the stipulated time, steam coal converts in soft coal.

Pellets This is manufactured from down grade non coking coal. Soft coke manufacturing cost is high which in turn leads to high selling price. Hence a substitute is used to quench the demand. Pellets (a type of coal) have the advantage of burning without emitting smoke and has higher calorific value, which is used in domestic fuel.

Washed Coal Coking coal having good coking properties and high ash content is washed to lower ash content which is used in steel plant.

Table 2.1: Categorisation of Coal and Coke

Sl No.	Class	Grade	Grade Specification
1.	Non Coking coal produced in all states other than Assam, Arunachal, Meghalaya and Nagaland.	A	Useful Heat Value (UHV) exceeding 6200 Real /Kg
		B	Useful Heat Value (UHV) exceeding 5600 Real/Kg. but not exceeding 6200 Real/Kg.
		C	Useful Heat Value (UHV) exceeding 4940 Real/Kg. but not exceeding 5600 Real/Kg.
		D	Useful Heat (UHV) exceeding 4200 Real/KG but not exceeding 4940 Real/Kg.
		E	Useful Heat Value (UHV) exceeding 3360 Real/Kg but not exceeding 4200 Real/Kg.
		F	Useful Heat Value (UHV) exceedig 2400 Real/Kg. but not exceeding 3360 REal/Kg.
		G	Useful Heat Value (UHV) exceeding 1300 Real/Kg. but not exceeding 2400 Real/Kg.
2.	Non Coking coal produced in the states of Assam, Arunachal, Meghalaya and Nagaland	Not Graded	
3	Coking coal	Steel Grade 1	Ash content not exceeding 15%
		Steel Grade 2	Ash content exeeding 15% but not exceeding 18%
		Washery 1	Ash content, exceeding 18% but not exceeding 21%
		Washery 2	Ash content exceeding 21% but not exceeding 24%
		Washery 3	Ash content exceeding 24% but not exceeding 28%
		Washery 4	Ash content exceeding 28% but not exceeding 35%
4	Semi Coking	Semi Coking Grade 1	Ash plus Moisture content not exceeding 19%
		Semi Coking Grade 2	As plus Moisture content exceeding 19% but not exceeding 24%
5	Hard Coke	By product premium	Ash content not exceeding 25%
		By product ordinary	Ash content not exceeding 25% but not exceeding 30%
		Beehive premium	Ash content not exceeding 27%
		Beehive ordinary	Ash content exceeding 31% but not exceeding 36%

Source : DGMS, 2000.

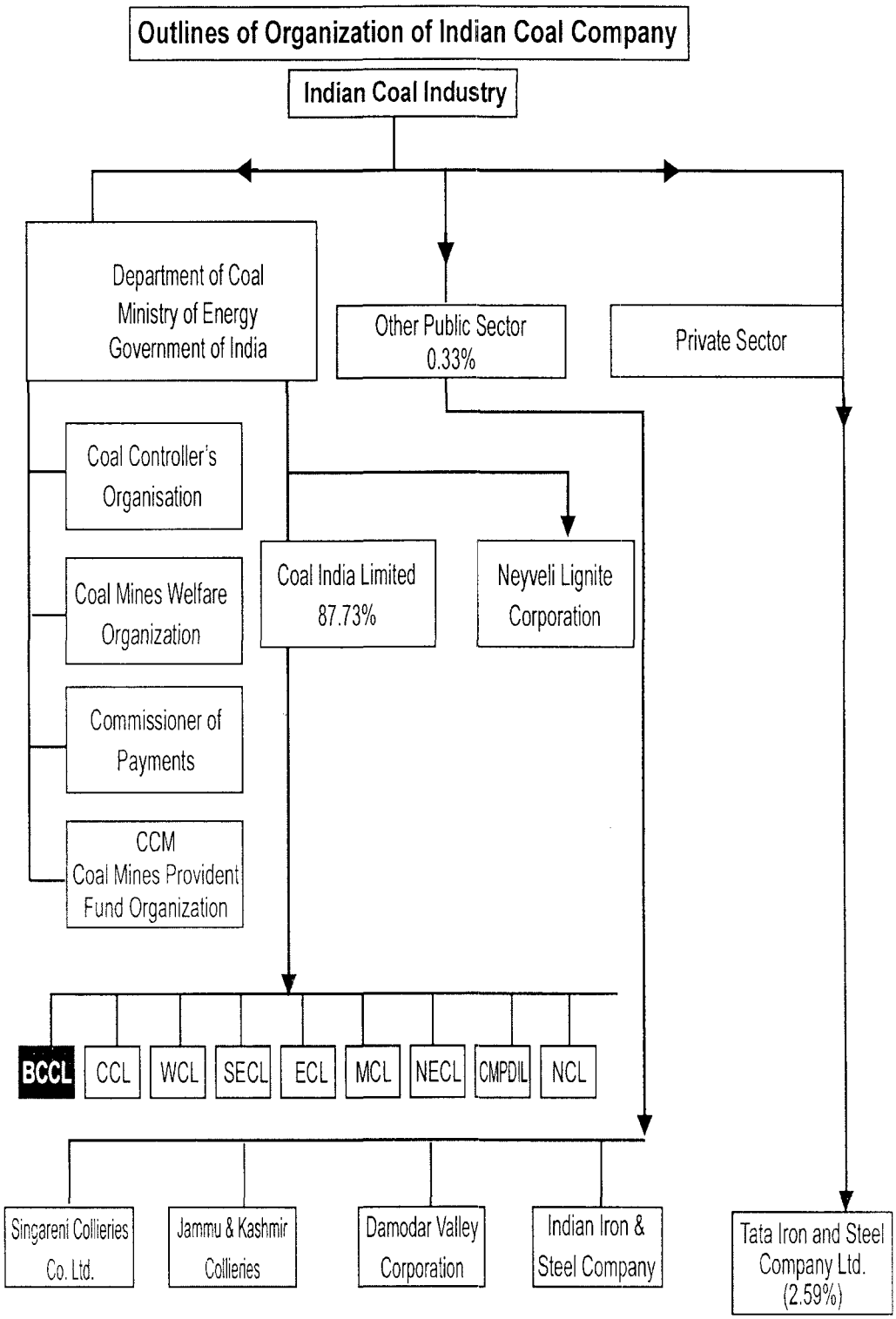
2.4 Composition of coal industry in India

Presently Government owns most of the mines in the country. Coal India Ltd. is the largest public sector in this field. It accounts for 87.73 percent of total coal produced in the country. Singreni Collieries Company Limited, a joint venture of Government of Andhra Pradesh and Government of India occupies the second place in respect of the total coal production. It accounts for 9.68 percent of coal produced in India. The captive mines of Tata Iron and Steel Company, a private sector organization, accounts for another 2.59 %. Other small companies produce rest 0.33% of coal viz. Damodar valley Corporation, Jammu & Kashmir, Indian Iron and Steel Company (Figure 2.1). The Department of coal in the Ministry of Energy, Government of India has been entrusted with the responsibility of the development and exploitation of coal and lignite. The corporate body managing for development and exploitation of coal and lignite namely Coal India limited and Neyveli Lignite Corporation respectively are under direct control of the Department of coal.

2.5 India's Coal Reserves : Total coal reserves in India is 253.3 billion Tonnes as on 1.1.2006 based on findings of Geological survey of India which is 10.2 percent of world coal reserve. About 70 percent of coal reserve concentrated in four states only namely Jharkhand, Orissa, Chattisgarh and West Bengal.

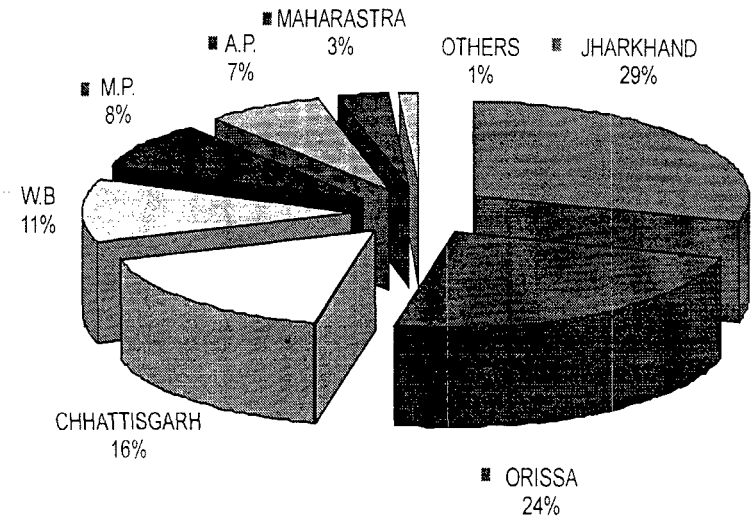
India holds the third positions in being the largest coal producing country and Coal India Limited that forms the largest corporate employer accounts for 85 percent of country's coal production. Jharkhand has 29 percent of coal reserves, Orissa accounts for 24 percent, Chattisgarh makes of 16 percent, West Bengal 11 percent of coal reserves, Madhya Prades has 8 percent and Maharastara holds 3 percent of the country's reserves. (Figure 2.2)

Fig. 2.1



Source: **Corporate Plan 1990-95, coal India Ltd.**

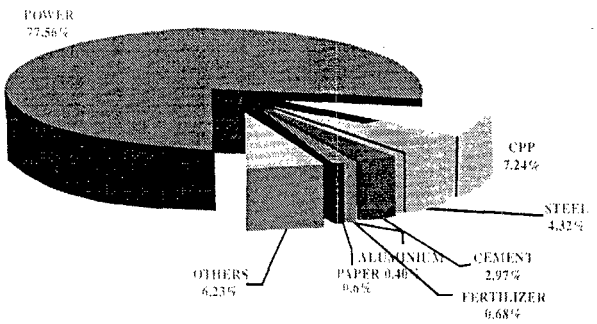
Figure 2.2: India's Coal Reserves



Source: **Business Standard, Nov., 2006**

2.6 Consumer profile : The power sectors constitutes the largest consumer of coal while other significant consumers are captive power plant, steel, cement, aluminium, fertilizer and paper etc. (Figure 2.3)

Figure 2.3: Consumer Profile (2005-06)



Source**: Business Standard, Nov., 2006**

2.7 Exports

Policy of our country is to export of coal, coke and lignite to those countries who are not having their own coal reserves. Also quality coking coal is exported to many countries for the production of steel etc. Details are given in table 2.2 which indicates that total export quantity is increased from 653092 (1995-96) to 1188029 in year 1999-2000.

Table- 2.2 Export of coal, coke and ligniete (1995-2000)

(Quantity in tonnes and value in '0000 Rs.)

Country	EXPORT									
	1995-96		1996-97		1997-98		1998-99		1999-2000	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Australia	75	517	304918	527689	445641	702977	670742	1147632	0.2	380
Bangladesh	500147	784253	15462	34750	2653	8667	-	-	4692	953272
Bhutan	11043	21133	40	474	-	-	-	-	2000	2940
Bruni	30	301	-	-	-	-	-	-	-	-
Canada	-	-	24	560	-	-	-	-	15	197
China P. Rep.	3142	5397	-	-	-	-	-	-	-	-
Chinese - Taipei	-	-	-	-	-	-	-		-	-
Colambia	-	-	-	-	20	146	-	-	0.1	434
Indonesia	-	-	20	241	20	285	25060	32357	-	-
Italy	-	-	-	-	-	-	320	411	-	-
Japan	-	-	-	-	-	-	-	-	-	-
Kenya	1	5	-	-	-	-	-	-	320	1730
Lebanon	-	-	-	-	281	744	-	-	-	-
Newzealand	-	-	-	-	-	-	180	378	-	-
Malaysia	-	-	1050	2497	-	-	-	-	-	-
Nepal	138115	152847	15723	263318	96319	179131	12654	235114	1214	226918
Oman	-	-	-	-	25	298	200	199	-	-
Quatar	-	-	-	-	90	72	-	-	-	-
Saudi Arab	-	-	-	-	-	-	905	1293	30	304
Senegal	-	-	-	-	-	-	20	264	-	-
Singapore	20	232	1090	3031	40	247	20	155	-	-
South Africa	37	258	-	-	-	-	-	-	-	-
Srilanka	-	-	60	189	126	831	65	575	10	373
Syria	150	1188	-	-	-	-	-	-	-	-
Thailand	-	-	1150	2471	-	-	-	-	-	-
U.A.E.	312	1725	35	258	1002	4892	37	518	550	1481
Uganda	-	-	-	-	-	-	-	-	-	-
U.K.	-	-	-	-	140	174	18	164	-	-
TOTAL	**653092**	**968009**	**481272**	**835478**	**546357**	**898464**	**824021**	**1419060**	**88313**	**1188029**

Source : DGMS, 2000.

2.8 Imports

India's import policy of coal, coke and lignite is to meet gap between national coal demand and national coal supply. Details are given in table 2.3. which indicates that total quantity of export is increased from 1368958 (1995-96 to 44196878 in the year 1999-2000)

Table- 2.3 : Import of coal, coke and lignite (1995-2000)

Quantity in tonnes and value in '0000 Rs.

Country	IMPORT									
	1995-96		1996-97		1997-98		1998-99		1999-2000	
	Quantity Tonnes	Value '0000 Rs.	Quantity Tonnes	Value '0000 Rs.	Quantity Tonnes	Value '0000 Rs.	Quantity Tonnes	Value '0000 Rs.	Quantity Tonnes	Value '0000 Rs.
Australia	9162184	20793739	921681	26642400	11760795	29854972	10382346	26566123	8562356	602263
Austria	13708	27891	-	-	5	14	-	-	25470	47993
Bhutan	4512	2661	1990	2121	2619	1992	3647	3523	5058	6765
Canada	-	-	-	-	-	-	301199	649005	-	-
Chinese P.	1341523	4123494	182284	443012	2291077	6893134	1714023	4553059	2026215	6632413
Chinese	-	-	751	8046	17343	32212	374480	211814	74768	220657
Denmark	-	-	-	-	177	1029	-	-	-	-
Egypt A.									54020	23898
France					74329					
German F.	215	3880	15	33	100	346	13	784	41	5247
Honkong	89756	191231	805501	1294194	-	-	-	-	4675	45399
Indonesia	1942871	2920262		8263	1969478	2837125	2384520	30530088	2530343	3634231
Iran	-	-	-	-	-	--	-	-	5	6224
Italy	-	-	-	-	-	-	-	-	66000	190738
Japan	133020	591587	1571		114104	436908		1778350	528364	1264351
Korea RP	-	-	-	-	16228	141293	-	-	41551	125018
Kuwait	2112	27513	-	-	-	-	-	-	-	
Malaysia	-	-	-	-	7712	21066	-	-	-	-
Morocco	-	-	-	-	-	-	-	-	9900	13384
Mozambique	-	-	-	-	-	-	-	-	40600	90442
Nepal	-	-	9	45	-	-	-	-	4	22
Netherland	-	-	6151	9454	-	-	-	-	-	-
Newzealand	186984	284206	172985	497890	163939	455699	71169	215964	173548	558113
Norway	1140	17909	458	14485	1713	11061	2303	10783	60	1744
Singapore	5000	15327	103	297	18582	18582	81215	125644	0.6	5
South Africa	787506	1757540	1092118	2183479	2058058	2058058	2517638	3706687	3205980	5967651
Switezerland	-	-	-	-	15000	15000	29184	24768	85511	121524
Thailand	-	-	-	-	0.3	0.3	-	-	-	-
U.A.E.	-	-	-	-	91	91	12000	17097	139597	196530
U.S.A.	6	153	11002	19528	13838	13838	11019	47951	239438	397049
U.K.		634	274	6552	12242	24834	279	9025	59642	16989
Russia	-	-	-	-	-	-	72286	240359	475378	1813628
Vietnam	11	166	7	1086	15	221	-	-	-	-
Total	1368958	30758193	3197300	31130855	18537445	44533142	18405801	41214024	18288517	44196878

Source : DGMS, 2000.

2.9 Formation of Coal India Limited

With the formation of Ministry of Energy, it was decided to bring all coal mines of Bharat Cocking Coal Limited, Coal Mines Authority Limited and National Coal Development Corporation under one holding company. Further reorganisation of these mines led to the formation of "Coal India Limited" with headquarters at Kolkata w.e.f. 1.11.1975, as the apex body with its five subsidiaries. Coal India Limited was incorporated with the following mission.

"The Mission of Coal India limited is to produce and market planned quantity of Coal and Coal Product economically, efficiently with due regard to safety, conservation and quality. "Corporate plan 1990-95, Coal India limited

Presently CIL, having its seven (7) subsidiaries, is responsible for coal production. Coal Mines Planning and Design Institute Limited based at Ranchi is a planning and design body for this industry.

During early period of post nationalisation, there were setbacks like acute shortage of coal, dislocation of the supply etc. These initial pick-ups were inevitable owing to the large size of Industry and the complex problems. Similar pattern had also been experienced in U.K. and other countries in the initial days of nationalization. In October 1978, the new Ministry of Energy was created to look after the affairs of coal industry. Heavy capital was invested in the sector for modernization of equipments and mechanization. As a result, there has been a steady increase of production, which stood at 124.92 million tonnes in 1981-82. The Coalfields Recruiting Organisation. (C.R.O.) was banned and plans were initiated to give more attention to the human factor.

An increasing trend in production of coal was observed since nationalisation of coal mines which rose upto 130.61 million tonnes in 1982-83. The rising trend in production of coal in both public sector and private sector mines was maintained and the total production went upto 334.3 million tones in the year 2000.

In year 2000, Coal India Limited, with its seven subsidiaries, produced 270.4 million

tonnes of coal which amounts to 80.79 % of the total composite coal production by both public and private sector coal mines. Among private sector coal producing organizations. Tata Iron & Steel Company produced the highest coal which accounted for 5.3 million tonnes in year 2000. Singareni Collieries stands at second place in respect total annual coal production.

2.10 Performance of Coal India Limited : Performance of Coal India Limited at different fronts like annual output, daily employment (during 1999-2000) and offtake of coal, despatch of coal to power sector and gross sales have been presented in this section. The performance has been on analysed for the period 1999-2000 to 2005-06. Secondary data for the period of 1990-2000 are available from government department source. Another set of data that has been compiled by private sources are available for more recent period i.e. till 2005. As and where latest data is available the period of analysis is 1999-2005.

- **Raw Coal Production :** Coal India Limited operates through seven coal producing subsidiary companies (ECL, BCCL, CCL, WCL, SECL, NCL, MCL.) and one planning and design institute (CMPDIL) spreaded over 8 states of India. There are 465 coal mines of which 284 are underground mines (U/G) and 144 are open cast project mines (OCP) and 37 are mixed mines of Coal India Limited. Coal production details of coal India limited between 1990-2000 are given in table 2.4.

Table 2.4 Annual output company wise
(In million tonnes) 1990- 2000

Company	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BCCL	25.1	26.6	27.6	28.9	29.3	28.4	28.9	30.1	29.2	26.8	26.9
CCL	28.1	30.8	32.0	33.2	32.9	29.0	31.8	32.3	31.7	32.2	33.4
ECL	22.9	24.0	23.5	23.4	23.0	25.7	28.7	28.5	27.5	24.8	27.1
MCL	-	19.7	22.9	23.4	23.0	25.7	28.7	28.5	27.5	24.8	27.1
NCL	24.7	30.1	29.6	30.7	32.1	35.0	36.2	36.9	35.8	37.0	40.3
NEC	0.6	1.0	1.0	1.2	1.2	21.0	0.8	0.7	0.6	0.6	0.7
SECL	53.1	41.6	44.9	47.4	48.6	51.7	53.9	56.0	58.6	57.0	60.5
WCL	21.8	24.6	26.8	25.8	26.4	28.5	29.7	32.5	32.3	32.6	35.8
CIL	**176.3**	**198.4**	**208.3**	**214.4**	**219.9**	**230.6**	**246.2**	**258.0**	**260.5**	**253.1**	**270.4**

Source : DGMS, 2000.

• **Average daily employment :** Average daily employment company wise during the year 1990-2000 of Coal India Limited is given in table 2.5

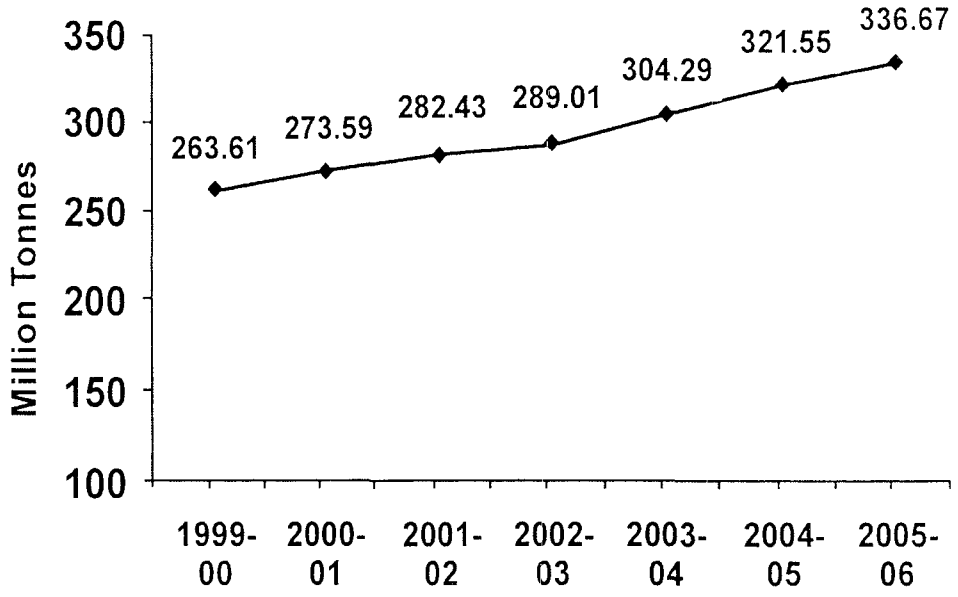
Table-2.5 : Average daily employment company wise (in thousand) 1990-2000

Company	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
B.C.C.L.	116.7	114.4	111.5	107.6	101.4	98.3	94.4	90.8	86.6	80.2	74.8
C.C.L.	64.9	64.5	63.7	62.5	59.9	59.2	57.9	56.6	54.9	53.7	50.5
E.C.L.	124.7	127.0	124.6	122.7	117.0	110.1	110.1	110.2	107.0	98.7	92.7
M.C.L.	-	14.4	15.3	15.2	15.4	15.6	16.5	16.5	16.6	17.7	17.7
N.C.L.	10.0	11.4	11.2	11.5	10.8	11.1	11.6	12.3	12.4	13.2	13.0
N.E.C.	3.6	3.5	3.5	3.4	3.2	3.0	3.0	2.9	2.9	3.1	3.0
S.E.C.L.	75.6	63.8	65.2	65.8	63.4	64.3	62.0	63.4	63.6	63.7	62.9
W.C.L.	56.2	56.7	57.9	56.3	54.6	54.3	53.4	55.1	55.6	52.9	53.7
C.I.L.	451.7	455.7	452.9	445.0	426.3	415.9	409.0	407.8	399.6	383.2	368.3

Source : DGMS, 2000.

• **Offtake of Coal** Details of oftake of coal produced by Coal India Limited between 1999-2005 are given in figure 2.4.

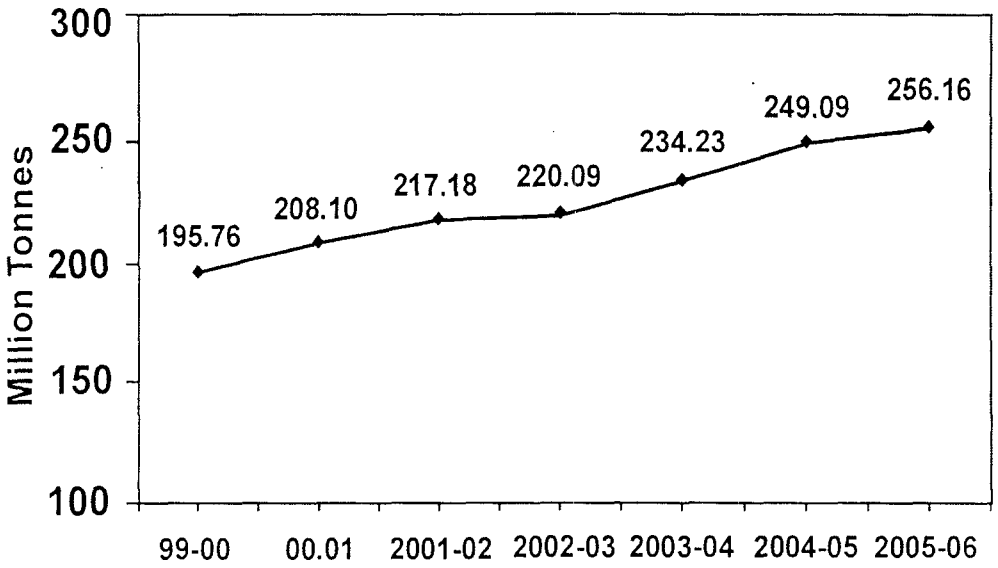
Figure 2.4: Offtake of Coal



Source: **Business Standard, Nov., 2006**

• **Dispatch of coal to power sector :** Dispatch of coal produced by Coal India limited to power sector (i.e. for both private and public sectors) between 1999-2005 are given in figure 2.5.

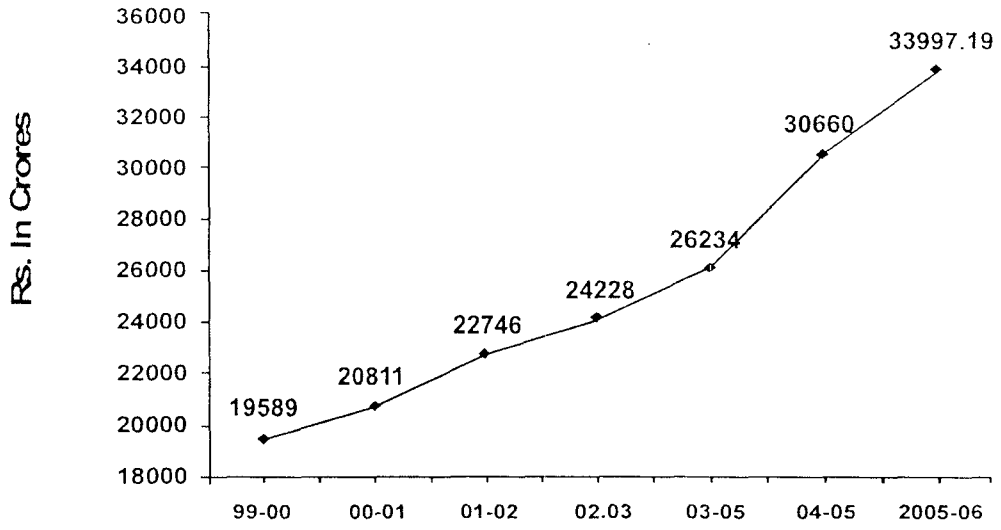
Figure 2.5: Despatch of Coal To Power Sector



Source: **Business Standard, Nov., 2006**

• **Gross Sales** : Gross sales of Coal India Limited between 1999-2005 are given in figure 2.6

Figure 2.6: Gross Sales

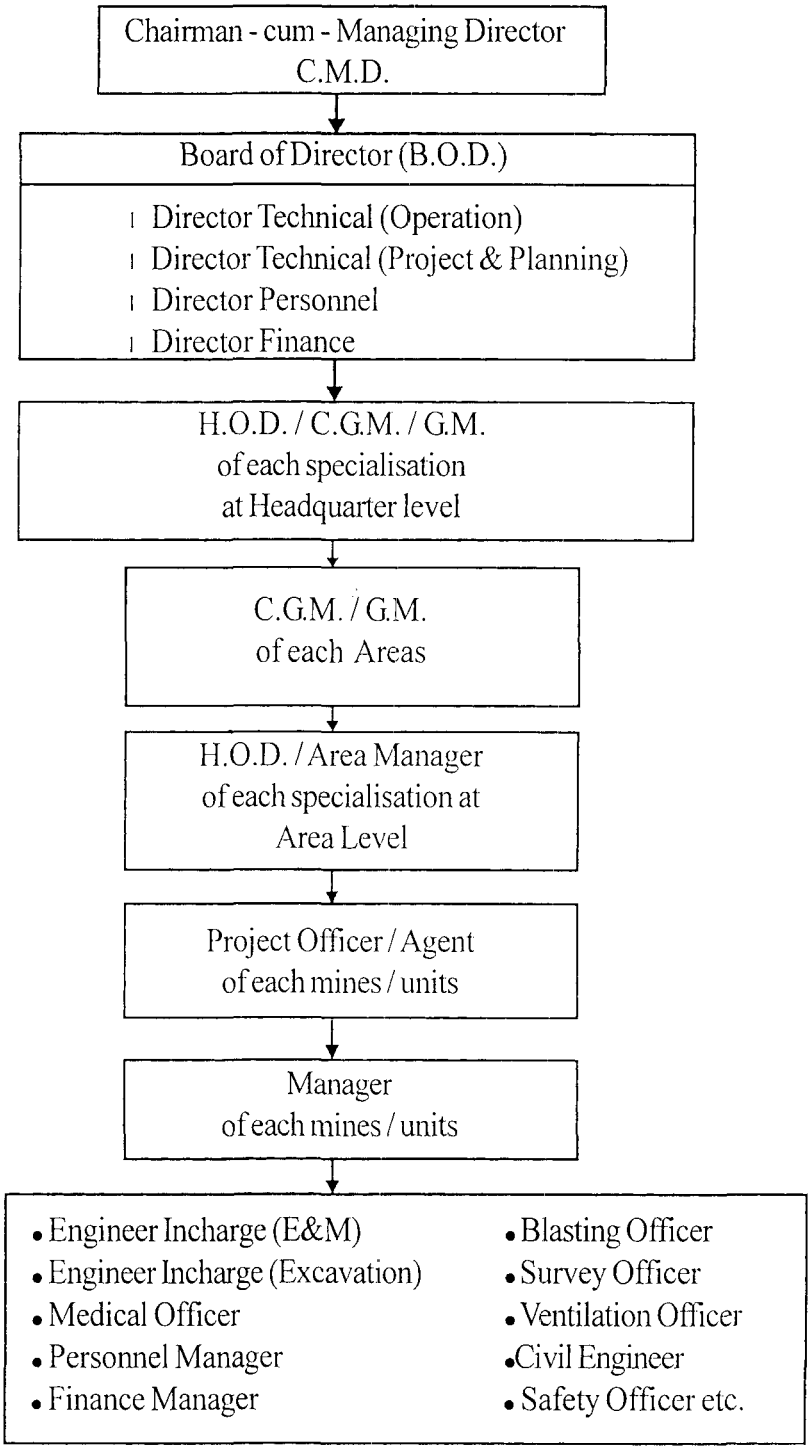


Source: **Business Standard, Nov., 2006**

2.11. Formation of Bharat Coking Coal Limited

After nationalization of coal industry Bharat Coking Coal Limited was formed on 1st may 1972 in which planning and production of coking coal of Jharia coal field was proposed. Details of organisational structure of BCCL, Dhanbad is given below:

Figure 2.7 Organisational Structure of BCCL - Dhanbad



Source : *Annual report - 2000, BCCL*

• Entire B.C.C.L. mines have been grouped in 12 areas for effective administrative control (Table: 2.6).

Table: 2.6 Details of Areas of BCCL

Area Number	Name of Area
Area -I	Barora
Area - II	Block-II
Area - III	Gobindpur
Area - IV	Katras
Area - V	Sijua
Area - VI	Kusunda
Area - VII	P.B. Area
Area - VIII	Kustore
Area - IX	Bastacolla
Area - X	Lodna
Area - XI	E.J. Area
Area - XII	C.V. Area

Source : Annual Report - 2000, BCCL

• Each functional areas are having an average of 6-7 mines where executives of 21 different specialisations are working (Table 2.7).

Table- 2.7

Details of different disciplines of organization

Sl.No.	Name of Cadre	Sl.No.	Name of Cadre
01	Mining	12	Material Management
02	Excavation	13	Sales and Marketing
03	E&M	14	Medical Services
04	Civil Engineering	15	Legal
05	Personnel	16	Survey
06	Finance and Accounts	17	Public Relation
07	Horticulture	18	Secretary to Board
08	Internal Audit (Company HQ)	19	Revenues
09	I.E.D.	20	I.S.O.
10	Telecommunications	21	H.R.D.
11	Geology & Mining		

Source : *Corporate Plan 90-95, Coal India Limited*

2.12 Role of Human Resource Development

Amongst the various objectives of nationalisation of coal mines a major one was related to elimination of exploitation of labour. This marked the beginning of treatment of employees as a resource in the Coal sector. Much water has flown down the river since then and today BCCL has a well developed, Human Resources Development (HRD) department headed by the GM (HRD). It is responsible for keeping the employees in good shape, both physically and mentally. Presently, there are about 2254 executives at different hierarchical levels, 8000 supervisors 18000 workers of open cast project mines (OCP) and 34000 workers of under-ground mines (U/G) in BCCL Dhanbad. The HRD department aims at creating mechanism and processes in the organisation to continuously develop the potential of employees at all levels. It functions through two main wings, the management development and the technical training.

During 1990-2005, there have been a total of 475 in-company programmes organised by HRD department of the company, for the executives. Programmes for workers and supervisors were also organised by this department. The HRD plan of the organisation is quite ambitious and the company made a good unit. In 2006, 45 in-house management and employee development programmes were conducted covering 740 executives, 100 supervisors and 90 workers. Four comprehensive Stress-Management programmes of 4 days duration were conducted in 2006. In the year of 2007 at least 16 programmes on stress management of 4-5 days each are to be conducted.

It is thus obvious that stress has become a matter of concern for the BCCL management, justifying our choice, especially when there are around 2254 executives spread over eight layers of managerial levels ranging from E-I (E stand for Executive) to E5 and M-1 (M stands for Managers) to M-3.

Our study assumes significance in view of the fact that the BCCL, a Subsidiary Company of CIL, picked up for this study, has ambitious plans for the future. The CIL wants to raise production to 371 metric tonnes in the year 2006 and B.C.C.L. is to be a leading contributor.

Details of Indian Coal Industry like origin and growth, nationalization of coal industry, formation of Coal India Limited and B.C.C. L. have been discussed. Performance of Coal India Limited, India's Coal Reserve, consumer profile and other latest data have been also mentioned. In next chapter, review of literature concerned will be discussed.

CHAPTER – 3

Literature Review

Review of Related literature

In the second chapter we have given a general introduction about origin and growth of the coal industry in India. In the present chapter we aim to provide a comprehensive review of the related literature concerned with the theme of this research.

With researches on various aspects of the theme of this subject pouring in continuously, the volume of related literature has grown in size. It is beyond the scope of the present report to take into account all of them. However, we have tried to focus on the specific subject of our study. Literature related to areas of our concern have been reviewed under relavent sub-sections.

3.1 Conceptual contributions

Though arousal of interest of management scientists in the field of stress is a recent phenomenon, yet the subject has been explored since ancient times. The phenomenon of stress has been mentioned even in the vedic literature. Stress is one of the noteworthy concepts ever developed in the social and biochemical science. However, its potential as a prime intellectual tool for not only understanding but also explaining individual and collective human behaviour and disorders has not been fully realized. What has acted as an impediment in the adequate use of the concept of stress is the fact that in different investigations some what different referents or meanings have been used, thus employing different explicit or implicit models.

Selye (1974) an eminent Canadian scientist, defined "Stress as the non-specific response of the body to any demand". Approaching stress from a physiological point of view, Selye and his colleagues conducted extensive investigations on the wide spread non-specific bodily changes that occur as reactions to stressful situations. One of the most commonly accepted definitions of stress is that it is any thing which causes an alteration to the psychological haemostatic processes.

Rao (1983) high-lighted the ancient Indian contribution as an alternative mode of thinking about stress in order that a comprehensive conceptual model, culturally specific to India could be developed. Confining himself to the indigenous systems of samkhya, yoga, and Ayurveda, Rao highlighted two Indian concepts, namely, Klesa and Dukha, which correspond not only to the concept of stress in common use but also, to an extent, to the concept in its technical sense. The concept of Klesa, as crystalized in the Yoga framework, refers, largely to the stressor aspect, while the concept of dukha in the Samkhya relates to the phenomenon of stress itself. In the Samkhya System, Dukha signifies the stress that the individual experiences in the course of his interaction with the world around him. It describes an organ state involving the experience of emotions and is characterized by an urge to escape or avoid. After a painstaking review of ancient Indian literature, Rao concludes that the broad based conceptual model of stress provided by the Yoga-Sutra relies on the cognitive appraisal of the self, the object and the threat. He has also discussed stress with reference to situations in the Gita claiming that the Gita brings out the importance of the individual's perception of himself in his role-status, and of the objective environment, including the task assigned to or accepted by him. Rao convincingly brought to light the ancient Indian contribution to the understanding of the stress phenomenon on the basis of which a comprehensive model of stress, culturally specific/typical to India, could be developed.

Singh (1991) explored the impact of job stress on frustration, physical strain, alienation and intent to quit. The results show that experience of inequity, role conflict, Job-man mismatch and role over-load significantly influence all job strain dimensions.

Srilatha (1991) reviewed the literature on organizational stress and found that stress in fundamentally a psychological phenomenon with immediate and direct physiological manifestations as well as an experience of discomfort. In physiological stress, three stages of exhaustion have been discussed.

Physiologists, psychologists and management theorists have unanimously uphold stress as a major issue of modern times. Stress experienced by executives are self created stress (hierarchical struggle, lack of contentment, anger and hurry and worry), created by superiors, peers and subordinates and situation.

Beehr (1995) reviewed the literature on psychological stress in the workplace and examined the links between social psychological characteristics of the workplace and harmful psychological or physical outcomes for the individual. The workplace characteristics are usually labeled stressors and the individual outcomes are collectively known as strains.

Four approaches to occupational stress i.e. medical, clinical psychology, engineering psychology and organizational psychology have been proposed. Role ambiguity and role conflicts were among the first social psychological stressors to be studied in the work place. Individual strains are outcomes of ill health in the form of psychological, physiological and behavioural strains.

3.2 Coping

With the realization regarding inevitability of stress dawning on organisations the focus has shifted to coping behaviour rather than stress per se. "The last twenty five years have witnessed a vast increase in researches devoted to the concept of stress and coping, especially in journals oriented to managers. But many of these articles offer only catchy, popular titles. Consider the following (1) 'Living-even-thriving-with stress (2) What is your stress quotient? (3) Stress-the father of disaster', (4) Coping with the stress that cripples, (5) Take the pressure off your executives and (6) Putting a stop to the strain drain'. There are occasional contribution that argue that executive stress is a necessary and beneficial condition motivating individuals towards better performance and personal growth. Nevertheless, these studies do suggest that managerial stress exists as a real problem in today's organisation, with serious implications for the health and well being of individuals occupying management positions. They also promote the

notion that managers can effectively deal with their stress by their personal actions.

Eaton (1963) and Singer (1960) worked on strategies for managing stress. They advise (1) applying sound administrative principles, (2) recognizing the role requirements of your position; (3) maintaining perspective (4) keeping a balance between work and accepting your emotional needs. The main thrust of these 'how to' proposition is to offer general prescriptions for doing better. But these fail to 'work wonders' as it is not clearly specified how these steps are to be implemented.

Charlesworth (1997) proposed that stress and tension could be used in creative ways to make use of energy that would otherwise be lost through distress and disease. Relation of physical stress with emotional stress, mental health and disease were established. The study identified various types of stressors like emotional stressors, family stressors, social stressor, change stressors, chemical stressors, work stressors, decision stressors, communicating stressors, phobic stressors, physical stressors, disease stressors, pain stressors and environmental stressors etc. Progressive relaxation, differential relaxation, scanning for tension, breathing for relaxation and reaching deeper level of relaxation were proposed for stress management. The important aspects are systematic exercise sequence, awareness of residual tensions and the regular practice needed to make muscle relaxation a routine way of life. Study proposed measures like time management, keeping body tuned up and safe and nutrition and weight control for coping with stress.

Auerback (1998) studied the management of stress with four objectives i.e. (a) to describe the theoretical and conceptual foundation of stress and stress management. (b) to give an overview of the current status and development in the field (c) to delineate the basic elements of the major stress management intervention technique and (d) to provide guidelines for when it is most appropriate to use particular technique.

Study involved historical, theoretical and experimental foundations to the concept of stress, fear, anxiety and copying. It attempted to show how developments along those

lines have provided the underpinnings for the evaluation of the stress management procedures. Study indicated physiological effects of exposure to stressors, emphasizing the role of cognitive appraisal as the starting point in the physiological as well as the psychological components of the stress response. Focus has been given on the nervous system, the immune system, and the endocrine system the three most important body system involved in the stress response.

Study detailed stress management procedures, their origins, the way that they are implemented and their current status in terms of overall effectiveness and relative utility for ameliorating particular types of stress related problems.

Study indicated that stages of use and abuse of drugs in stress management are accepted medical or recreational use, drug misuse, compulsive abuse and addiction.

Montgomery (2001) proposed five factor model of stress i.e. stressors, thoughts, physiological responses, feeling and behaviours for stress process in human.

The study noted relaxation as one of the popular approach to stress management in which physical relaxation through yoga, meditation etc and mental relaxation through feeling better by thinking straight have been proposed. The study proposed measures like tuning of human body (like vehicle) assertive beliefs, improved communication, solving problems and managing time, sound slipping habit and job redesign for coping with stress.

Burke and Weir (1980) reviewed the literature on coping and summarised, in tabular form, the coping strategies proposed along with the names of the proponents.

Though the coping strategies mentioned, cover a wide array of potentially effective measures, suggestions are brief and rarely explain what specifically will be accomplished for the person. They rarely offer an empirical verification in support of the strategies. The coping strategies are more often than not presented as universal strategies, applicable to any manager in any situation. Moreover, some of the strategies

are incompatible with others, for example 'working harder' versus 'diverting attention from the task.

TABLE - 3.1 BASKET OF COPING STRATEGIES

Sl.	Coping Strategy	Proponent
1.	Talk with other person sympathetically	Mc Cann (1972), Walsh(1975)
2.	Build work-group norms of Co-operation not competition	Chase (1972), De Ville (1970)
3.	Delegate, seek help of others	De Ville (1970), Fair (1976)
4.	Develop satisfactory relationship with supervisor	De Velle (1970)
5.	Plan instead of responding to pressure	Howard (1978)
6.	Have time for fun and solitude,	Langner (190), Bensahel (1977) Tranquility
7.	Divert attention from stressful situation	Uris (1972)
8.	Increase self-awareness-what causes Stress, how do we respond to Stress ?	Overbeke (1975), Student (1975), student (1977), Fair (1976)
9.	Problem-solving, planning, Pacing of one's working day	Fair (1976)
10.	Professional counseling and Therapy, group therapy, Encounter groups	Chase (1972), Langner (1970)
11.	Hobbies, leisure activities, Recreation	De ville (1975), Marks and Banack (1977), Mc Cann (1972)
12.	Leave job for another	Mc Cann(1972), Overbeke (1975) Chase (1972)
13.	Tranquillisers, drugs	Boines and Horoschak (1963) Mc Cann (1972)

14.	Change to tasks that allow in to wander.	Mc Cann (1972)
15.	Change to leisure task guaranteeing Immediate satisfaction	Mc Cann (1972)
16.	Proper nutrition and diet	Marks and Banack (1977),
17.	Short or long breaks	Marks and Banack (1977), Bensahel (1974)
18.	Devote yourself fully to what you are doing	Bensahel (1974)
19.	Pamper your body-sleep,	Bensahel (1974), De Ville (1970), Marks and Barack (1997)
20.	Erhard Seminar Training (EST)	Marks and Barack (1977)
21.	Learn to do one thing at a time	Bensahel (1975)
22.	Do not rely too heavily on one person	Bensahel (1974) Person
23.	Behavior modifications	Fisher (1974)
24.	Develop perspective-recognize The inevitable	Overbeke (1975), Student (1977), Bensahel (1974), Uris (1972)
25.	Promise yourself a reward when situation is over.	Bensahel (1974)
26.	Develop pear support	Bensahel (1977).
27.	Have yearly medical examination	Walsh (1975), Mc Cann (1972)
28.	Develop peer support	Student (1997)
29.	Biofeedback	Nedeffer (1975), McQuade (1973), Whitehead (1977), Smit (1977)
30.	Transcendental meditation	Kory (1976), Frew (1975) Walsh (1975), McQuade (1973)
31.	Relaxation	Benson (1974), Student (1977)

		Marks and Banack (1977)
32.	Take vacation and holiday time	Walsh (1975), Uris (1970)
33.	Rotation of authority	Chase (1972)
34.	Physical exercise	Wals (1975), De Ville (1970) Marks and Banack (1977)
35.	Compartmentalize work and home life	Marks and Banack (1977), Mc Cann (1972), De Ville (1970), Fair (1976)
36.	Remove petty annoyances in physical environment	Chase (1972)
37.	Develop growth, interpersonal Skills, Consideration for others	Chase (1972)
38.	Company-developed diagnostic and remedial Programmes (health, rest, education, exercise, etc)	Kennedy (1976), Margerison and Fordham (1976)
39.	Maintain life change events within tolerable limits	Howard (1978)
40.	Work smarter not harder	Howard, Rachnitzer and Cunningham (1975).

Source : Burke and Weir, 1980

3.3 Stress Studies on public and Private Sector

In India, a number of studies are available that have tried to assess the problem of job related stress. Pestonjee (1999), while analyzing stress among special occupational groups reviewed more than 15 studies on this subject. Many of these studies have used the occupational role stress (ORS) developed by a team of researchers at Indian Institute of Management (IIM), Ahmedabad. ORS has emerged a potent tool to scientifically assess the problem of stress in an organization. Some ORS-Scale (Pareek, 1983c) based studies are mentioned below,

Sharma (1987) targeted managers and supervisors of public and private Pharmaceutical organization for his study. His aim was to ascertain the role of

motivational climate on four psychological variables -Job satisfaction, participation, alienation and role stresses. In this study the MAO-C (Pareek. 1989), S-O Inventory (Pestonjee, 1973), ORS Scale (Pareek, 1983c), Alienation Scale (Dutt and Kureshi, 1976) was administered on sample of 150 respondents including 75 managers and 75 supervisors.

The findings indicated that the employees of private sector organisation scored higher and significantly differed from those of public organization on inter role distance, role expectation conflict, role erosion, role isolation, personal inadequacy and resource inadequacy. However, public sector employees scored higher on role stagnation, The study also found that supervisors of public sector organization scored significantly higher on role stagnation. Role ambiguity and resource inadequacy than managers of public sector organization. Further, managers in the public sector scored significantly higher than supervisors of private sector on role erosion and role overload. The key explanatory variable of role stress was found in the form of dependency climate in the public sector organization and control climate in the private sector organization.

This study concentrated on two pharmaceutical companies only. The researcher, therefore, suggested the need to conduct similar research on other organization with a larger sample. The author concluded that to foster a more positive attitude among employees, the organizations should have a perfect blend of achievement, expert influence and affiliation.

Ahmad, Bhardwaj and Narula (1985) conducted a survey of stress among executives. A group of 30 executives from each sectors (public and private) were compared on ten dimensions of role stress. Study revealed significant differences on three dimensions namely role isolation, role ambiguity and self'-role distance. Background factors like age, education, income, experience and marital status of executives were found to have insignificant influence on with role stress in both the groups.

Jha and Bhardwaj (1989) carried out an empirical study of stress and motivation of the front line managers. 120 junior level managers were randomly selected from different organizations (public and private both). It was observed that private sector managers scored more than Public sector managers on achievement need and total motivation factor. Service oriented managers scored high on all the needs and total motivations. Motivation and stress were positively co-related for managers in the private sector.

Sehgal (1997) studied the effect of role stress on level of involvement the person has in the job and alienation, and coping mechanisms used by him/her to deal with stress. The study included 222 executives belonging to junior, middle and senior levels in a large public sector organization. It used a set of four instruments-ORS scale (Pareek, 1983c), the job involvement scale (Kanungo, 1981), the Alienation Scale (Kureshi and Dutt, 1979) and Role PICS (Pareek, 1983). The study noted that the role erosion, resource inadequacy and inter-role distance were dominant contributors to role stress for the total sample. Junior and middle level executives scored lower on total ORS as compared to top-level executives. The analysis of the results indicated that the total ORS was co-related positively and significantly with despair (powerlessness), unstructured universe (normlessness), and psychological vacuum (meaninglessness) variants of alienation. The study also established that the senior level executives experienced more role expectation conflict while middle level executives reported higher ro l e stagnation and junior level executives experienced relatively higher role isolation and self-role distance.

Dwivedi (1997) assessed the magnitude of trust, distrust and occupational role stress (ORS) to determine the extent of relationship among public and private sector organisation. The researcher also tested trust, distrust and ORS consistency across the 'low' and 'high' performance organizations, This study covered 55 executives from public sector and 62 executives from private sector. The ORS-Scale (Pareek, 1983c) was administered to the respondents.

The study found that in high performance organization, stress levels were found to be low whereas in low performance organization, stress levels were reported to be high. The trust measured had positive impact on organizational performance whereas distrust and role stress variables had negative impact. The study also acknowledged that the trust, distrust and role stress variables significantly differentiated the low performance (Public Sector) and high performance (Private Sector) organizations.

Pattanayak and Mishra (1997) carried out a comparative assessment of work organizations in old and new public sectors in relation to ORS and quality of work life (QWL) as an index of organizational effectiveness. The study administered ORS scale (Pareek, 1983c) and Quality of Work life Scale (Jain, 1991) on 800 respondents from old and new public sector organizations. The sample was drawn from service and manufacturing from amongst and executives and non-executives. The results showed that the significant differences were observed between the old and new public sector organizations on all the 10 dimensions of organizational role stress and total role stress. The study reported that executives and non-executives differed significantly on all ORS dimensions and total ORS. Further, the production and service employees differed significantly on all the subscales of QWL and ORS.

3.4 Studies Abroad

Northwestern National Life Insurance, Minneapolis (1992) carried out a survey of nearly 1300 full time employees in a random sample of private companies in the United States. Among other factors the level of hierarchy, income, occupation and gender factors emerged as a dominant stressor. The survey found that stress affects women more than men. Women exhibited greater tendency to report burnout, stress-related illness or even desire to resign from their jobs. The researchers suggested several reasons for this. Women were often paid less than men for their work, even if they had same educational background. Organizations often lack coherent policies to respond to family issues. Single women with children, along with low-paid college

graduates, are at highest risk of burnout. Some 50 percent of single women with children reported burnout. compared to 31 percent of married women with children.

Institute of Management, University of Manchester Institute of Science & Technology (UMIST, 1999) carried out Quality of Working Life or QWL survey of a group of 5000 British managers (from Director to Junior managers). This study explored psychological implication of the americanization of work in the United Kingdom. It was noticed that the changes toward downsizing and outsourcing led to substantially increased job insecurity, lowered morale and erosion of motivation and most important of all, loyalty. Profitability and high rate of productivity led to these changes. The organization lost the right mix of human resource skill and experience. Study also found that 71% respondents reported that long working hours damaged their health, 86% reported that it adversely affected their relationship with their children while 79% felt that it damaged their relationship with their partner, and 68%, said that long hours reduced their productivity.

Institute of Social Research (ISR, 1995) conducted a stress research on workers in European countries. Study covered 400 companies in 17 countries representing 8 million workers throughout Europe. The major problems identified in this study were that most European countries showed a substantial decline from 1985 to 1995 in perceived job security, showing the worst decline in employee satisfaction in terms of employment security, dropping from 70% who were satisfied (in terms of job security) in 1985 down to 48% by 1995.

Hall & Savery (1986) carried out a survey among 532 managers in 36 Western Australian Organization. Largest group consisted of middle level managers. 80% of the sample was under 50 years of age. The study found the relationship between stress and illness. Managers under 30, felt bureaucratic interference. In addition one fourth of the younger managers expressed confusion regarding line of authority. Out of total respondents, 68% managers who worked

between 41 and 60 hours a week felt pressure of the work.

Schafer, Wickrama and Keith (1998) undertook a longitudinal analysis of a model (K.J. Kiecolt, 1994) of effects of stress in marital interaction on change in depressive symptoms as mediated by unfavorable reflected appraisals, low competency, Self-efficacy and self esteem. This study randomly selected 98 married couples, interviewed in 1979 and 1992. Two marital interaction stressors were measured: inequity in marital relationship and role disagreement as a type of interpersonal difficulty. The data supported the proposed model. Stressors in marital interaction were associated with unfavourable reflected appraisals that had a direct effect on self efficacy and an indirect effect on self esteem.

These studies highlight the importance of gender issue, downsizing, outsourcing, employment, security and health & illness contributing to occupational stress in Western Countries.

3.5 Sectoral Studies

This section covers studies across various Sectors and occupational groups. This review aims to evolve a comprehensive understanding regarding intensity and potential of stress in varied setting and work environments.

3.5.1 Role Stress Among Administrative Services Professionals

Upadhyay, Krishna & Solanki (2004) attempted to identify different coping strategies used by forest officers while facing multifarious role stressors. Thirty four forest officers from Bhopal and surrounding areas participated in this study. The study utilized the subjective, objective and projective Role PICS (pareek, 1983b) techniques as pertheir suitability for extracting different types of information.

The results suggested that there was a positive and significant relationship between stress, avoidance strategies and type A personality. Forest officers having type A personality experienced more role stress and used more

avoidance based strategies to cope with it. Overall, 23% of the sample was found to be experiencing a high stress and ineffective coping styles. The study identified work related stress, interference, forestry activity offences, support system, insufficient time for family, hectic tours/field visits and lack of autonomy and decision making power as factors for stress among Indian forest service officers.

3.5.2 Role Stress in Scientific Research Sector

Roy (1997) examined the relationship between ORS and social support among scientists belonging to Indian Council of Agricultural Research (ICAR). The ORS Scale (Pareek, 1983c) and social support Scale (Roy 1997) were administered among 23 junior and 30 senior scientists. Results indicated that junior scientists scored higher and significantly differed from senior scientists on the dimensions of role stagnation, role erosion and resource inadequacy. While senior scientists scored higher on role overload as compared to junior scientists but no significant difference was found. This study highlighted the need for social support from seniors to their juniors.

3.5.3 Role Stress among police personnel

Kalia (1995) conducted a study on male policemen belonging to Delhi Police. This study explored the relationship between job stress and personality factors among police officers and constables. The data from the study was collected from 390 Delhi policemen selected randomly form 8 different ranks ranging from additional commissioner of police to rank of constable and 8 different departments of police organisation.

This study found that personality attributes and personal and family background variables of policemen play a significant role in perception of job stress. The findings hinted at the crucial problem of job stress in policemen arising from the personal problems. the police organisation, the work environment, personality characteristics and personal and family background variables. Further, the study suggested that there is need to explore relationship between behevioural, physiological and health effects and experience of stress.

Singhvi and Mathur (1997) conducted a study on Central Reserve Police Force (CRPF) officers. The sample consisted of 19 gazetted officers of rank of Deputy Superintendent of Police (DSP) and 32 non-gazetted officers (12 station and 20 non-station postings). The ORS Scale (Pareek, 1983c) was administered on the sample to asses the total stress as also specific role stressors causing stress. Statistical tools like mean, standard deviation, critical ratio test and rank order correlation were used to find out whether gazetted and non-gazetted officers differed significantly in their scores on job stress. The differences for station and non-stations and non-gazetted officers were also probed.

The study found that role erosion and inter role distance to be the most dominant whereas role ambiguity and role overload to be the least dominant contributors of role stress. It was found that non-static and non-gazetted officers scored significantly higher on the entire role stress dimensions as compared to gazetted officers and static non-gazetted officers on all the ten dimensions of role stress as well as the total role stress.

Talib (1999) explored the problem of role stress among police personnel. The sample comprised 178 police personnel belonging to two groups viz, civil police and provincial arms constabulary (PAC) from the Uttar Pradesh region. The ORS Scale (Pareek, 1983c) was administered to the sample population to assess overall role stress and ten different role stressors. Statistical techniques like t-test and ANOVA were used to find out the actual differences between civil police and regional para military organization i.e. PAC.

The study found that the inter role distance, resource inadequacy and role erosion were the dominant stressors for the police personnel. More than 42% respondents were found under either medium high or high stress zone. The study also revealed that there was no significant relationship between role stress and variables like age and educational background. Data analysis of subordinate staff and officers revealed that

respondents at subordinate level scored significantly higher on total role stress than officers. The study found that role overload score was high in civil police personnel while PAC emerged as more stressed group. Inter role distance figured as a most potent stressor in both groups.

Mathur (1999) carried out a study on police personnel in India. This study analysed the stress and strain and copying strategies of sub-group of police based on age, rank, education, tenure and organisation. The study reported that the police in India are showing clear sign of work related stress, experiencing its negative impact on health. Various segments of the police hierarchy differ in their experience of work stress. The result indicated that police organisation in India needs to take note of the crucial problem of job stress. A comprehensive plan for the recognition, diagnosis and management of stress control programme for police personnel is expected to solve the problems. The study highlighted the counseling for better coping among the police personnel.

3.5.4 Role Stress Among Air Traffic Controllers

Mishra (1996) examined the nature of motivational climate, role stress and coping strategies among the air traffic controllers (ATC's). It investigated the relationship amongst these variables. It is quite surprising that in India, the problem of stress has not been sufficiently explored in the context of his highly stressful job. The sample included 120 male air traffic controllers working at three major international airports of India. The psychometric instruments–the MAO-C (Pareek, 1989), the ORS Scale (Pareek, 1983d)-were administered to the sample population to obtain data pertaining to motivational climates, role stress and coping strategies respectively. Statistical techniques such as ANOVA, co-efficients of correlation and stepwise multiple regression analysis were used to analyse the data.

The overall motivational climate was perceived as strong in control and dependency dimension and weak in achievement and extension dimension by air traffic controllers.

The study found inter role distance and resource adequacy to be the major sources for role stress. On the other hand, personal inadequacy and role ambiguity were found to be minor contributors of role stress. Further the study observed significant differences among air traffic controllers with respect to their age, education, work experience, marital status and total monthly income regarding their motivational climate, role stress and coping strategies. As far as the coping strategies adopted by the air traffic controllers were concerned, it was found that defensive style was most frequently used coping style. It is important to not that the avoidance strategies were found to be more frequently used than approach strategies. The researcher emphasized the need of special training and more active role of spouse in management of stress among air traffic controllers.

3.5.5 Role Stress Among Information Technology Sector Professionals

Aziz (2003) undertook a research study on information technology (IT) sector professionals. This research study examined organizational role stress among IT professional. The sample size was 257. It consisted of 138 male and 119 female employees drawn from eight IT firms based in Delhi and the National Capital Region. The ORS Scale (Pareek, 1983c) was administered among the sample population to assess overall role stress and ten different role stressors.

The study established that the information technology professionals were experiencing a fair amount of role stress. Further the study found that the Role Stressors that emerged as the top contributors to overall Organization Role Stress were Resource Inadequacy and Role Distance. Role Ambiguity and Role Isolation emerged as a least contributor to IT sector professionals.

3.5.6 Role Stress among working women

Kalia (2004) conducted a study on women managers. This study analysed the responses of a qualitative survey on stress & health aspects of women managers and how they cope with work challenges. The data for the study was collected from 100

women managers using in depth interviews in and out of Mumbai from diverse organizations.

The study found that the factors like clashes with superiors, competition, dual responsibilities, meeting deadlines. Lack of support from others, handling different types of clients, long working hours, and internal politics between colleagues emerged as prevailing stressors among working managers. Further, the study suggested that there is need to introduce flexi work schedule, creche facility and healthy work environment.

After going through the literature review, it is quite clear that stress research is a popular field of enquiry among social science researchers. A number of studies have been carried out in varied settings and sectors in India and abroad. All aforementioned studies have highlighted different dimension of the stress across varied occupational groups, sectors and national settings. The studies have also proposed various coping strategies. This also hints at further exploration still required. For example, the researcher could not lay its hands on research studies focussing on Indian Coal Industry. The growing importance of the sector from national standpoint necessitates focus on this sector. Therefore this study attempts to explore the phenomenon of role stress and coping strategies employed by executives working in the coal sector.

CHAPTER – 4

Methodology

Methodology

4.1 The Problem

Coal Industry is a key constituent of energy sector in India. It contributes to more than 70% of India's national energy requirements. This sector has recently been opened up for private sector. Previous studies suggest that jobs in the coal sector are more stressful than comparable jobs in other sectors. In fact, this job that involves activities against the nature i.e. both underground and open cast mines have their share of concerns. They involve significant challenge for the executives working there.

This industry is growing at a rapid pace. The liberalization has created a major impetus for change in this industry. The entire industry is in state of flux. The nationalized coal sector, till 1999, was operating under a protected environment. It had led to the development of specific work culture in the nationalized coal sector. The opening of this sector to competition has created ripples of change. The existing work culture has been rendered inadequate. The new demands require upgrading the existing work culture. The transition phase is likely to create stress. Hence, this study is aimed at assessing the intensity and nature of stress in this sector. Scientific investigation is expected to provide reliable results. These results would then become the basis for proposing strategies to tackle stress in this growing sector of Indian economy.

4.2 Objective

This study aims at understanding the phenomenon of role stress among Indian coal industry executives. Organizational membership world over has been considered a potent source of stress for individuals. Various studies conducted earlier and quoted in literature review substantiate the fact that organizational roles have a built in potential for conflict and stress.

This study aims to understand the nature and causes of role stress in Indian coal industry executives. It, then, wishes to propose suitable remedial measures. Specifically, the

study aims at :

1. Understanding nature and intensity of stress among executives serving Indian Coal Industry.

2. Exploring differences, if any, in the nature and intensity of stress among executives in the Indian Coal Industry vis-a-vis other industry professional.

3. Exploring difference, if any, in the quantum and type of stress among Indian Coal Industry executives having different education levels.

4. Exploring differences, if any, in the quantum and type of stress among Indian Coal Industry executives belonging to different hierarchical levels.

5. Exploring difference, if any, in the quantum and type of stress among Indian Coal Industry executives having different age groups.

6. Exploring differences, if any, in the quantum and type of stress among Indian Coal Industry executives serving under-ground mines(U/G) and Open cast project mines (OCP).

7. Exploring differences, if any, in the quantum and type of stress among Indian Coal Industry executives having varying length of service.

8. Proposing remedial measures to handle the stress in this sector .

4.3 Hypothesis

Different Null Hypotheses were framed in line with aforementioned objectives.

Ho1 there is no difference in nature and intensity of stress among respondents serving Indian Coal Industry.

Ho2 there is no difference in the nature and intensity of stress among Coal Industry executives vis-a-vis other professionals belonging to other occupational groups.

Ho3 there is no difference in quantum and type of stress among respondents having different educational levels.

Ho4 there is no difference in quantum and type of stress among respondents having different hierarchy levels.

Ho5 there is no difference in quantum and type of stress among respondents having different age groups.

Ho6 there is no difference in quantum and type of stress among respondents having different types of work place i.e. Open cast project mines (O.C.P.) and under-ground mines (U/G).

Ho7 there is no difference and in quantum and types of stress among respondents having different length of service.

PROPOSITION : In addition to above hypothesis, the study also worked on the following proposition i.e., executives are using varying strategies to cope with stress.

4.4 Tools Used

4.4.1 Organisational Role Stress (ORS)

Pareek's, (1983,a) organizational Role Stress (ORS) has been used to measure respondents 'Role Stress' in the coal industry (Annexure - I). The original version (English Language) for top, middle and lower level executives was administered among the respondents. This scale measures respondents quantum of stress in term of total ORS Scores. It also measures intensity of ten role stressors contributing to total ORS score.

The ten role stressors are :

I. **Inter Role Distance (IRD):** "Conflict between the Organizational and non-organizational roles".

II. **Role Stagnation (RS):** "Feeling of being stuck in the same role".

III. **Role Expectation Conflict (REC):** "Conflicting expectations or demands by the different role senders" (i.e.'significant' others who have expectation from the role).

IV. **Role Erosion (RE):** "Feeling that functions that should belong to incumbent's role are being transformed/performed or shared by other roles". It is a feeling of "responsibility without power".

V. **Role Overload (RO):** "Feeling that too much is expected from the role than what the occupant can cope with". It has two aspects quantitative and qualitative.

VI. **Role Isolation (RI):** "Lack of linkages of one's role with other roles in the organization".

VII. **Personal Inadequacy (PI):** "Lack of knowledge, skills or adequate preparation to be effective in a particular role".

VIII. **Self-Role Distance (SRD):** "Conflicts of one's values and self-concepts with the requirements of the Organization role".

IX. **Role Ambiguity (RA):** "Lack of clarity about expectations of others from the role, or lack of feedback on how performance is regarded by others". It may be in relation to the activities, priorities, norms or general expectations.

X. **Resource Inadequacy (RIn):** "Non-availability of resources needed for effective role performance."

Reliability of ORS Scale

The ORS scale has high level of reliability and validity as ascertained by Pareek (1983,c). Retest reliability of scale also has acceptable reliability value. Sen (1982) used ORS on the sample of 500 bank employees and retest reliability co-efficient were found for total role stress (.73) table 4.1 shows test-retest reliability of the ORS Scale.

Table 4.1: Test-Retest Reliability of the ORS Scale

Sl. No.	Variables	Coefficient	Level of Significance
1.	Inter Role Distance (IRD)	0.58	.001
2.	Self-Role Distance (SRD)	0.45	.001
3.	Role Stagnation (RS)	0.63	.001
4.	Role Ambiguity (RA)	0.65	.001
5.	Role Overload (RO)	0.53	.001
6.	Role Erosion (RE)	0.37	.003
7.	Role Inadequacy (RI)	0.58	.001
8.	Total Role Stress (ORS)	0.73	.001

Source: Pareek, 1983,

Scoring :

The Organizational Role Stress (ORS) scale is 5-point Likert type rating scale having the scoring pattern as follows:

- A score of '0' was assigned to an item if the respondent never or rarely felt that way.
- A score of '1' was assigned to an item if the respondents 'occasionally' felt that way.
- A score of '2' was assigned to an item if the respondent 'sometimes' felt that way.
- A score of '3' was assigned to an item if the respondent 'frequently' felt that way.
- A score of '4' was assigned to an item if the respondents 'always' felt that way.

As there are four statements for each of role stress dimensions, range of scores on each of stressors may vary from a minimum of 0 to a maximum of 20. The

cumulative ORS score may range from 0 to 200.

4.4.2 Projective Instrument for coping strategies Role (PICS)

The Instruments

Role PICS* is a semi projective instrument for assessing styles or strategies used by a respondent to cope with role stress. PICS is a short form of Projective Instrument for Coping Styles. Role PICS has three forms -Forms E, G and O. Role PICS (O) is used to assess coping styles in relation to organizational roles. In this instrument 24 situations are depicted in which a role occupant is involved in conversation with another person, and the role occupant or the other person makes a statement about a role stress situation. To maximise projection these are presented in cartoon like pictures, similar to Rosenzweig's Picture - Frustration study. A respondent is required to write down how the person, to whom a statement has been made, would respond. It is presumed that the responses will be a projective expression of the way the respondent himself would cope with a particular stress (appendix - 2).

Administration of Role PICS

Role PICS is administered individually. It takes about twenty minutes to fill out. For in-depth study, individual administration has some advantages as it provides an opportunity for clarifying doubts that respondents might have. It makes scoring and interpretation more reliable. However, in all cases, the respondent himself writes down his responses.

The main purpose of administration is to orient respondents away from any self critical attitude and towards a more objective identification with the person under role stress. In this way, the respondent tends to project, and perhaps reveal, his own underlying modes of responses in the given situation. For this, responses are to be given fast, otherwise "censorship" may influence them. The respondents are told to write down

the response that comes to their minds. Reponses to the situations are to be written in the same sequences in which they appear on the form.

Scoring

Role PICS being a semi-projective technique, the responses can be scored by using a system of categorising the responses.Two types coping styles i.e. approach and avoidance have been considered. Approach strategies are effective, which confront the problem of stress as a challenge and increase the capability of dealing with it. Ineffective strategies i.e. avoidance strategies reduces the feeling of stress by denying the reality of stress. Further, three dimension i.e. externality, internality and mode of coping have been suggested.

Now combining the above two aspects (i.e. approach and avoidance) and each of the three dimensions as mentioned above, eight categories of coping styles for Role PICS have been given below:

A Externality

The feeling that the external factors are responsible for the role stress, resulting in aggression towards and blame on such external factors. It may also indicate the tendency to expect and get solution for the stress from the external sources. Externality may be high or low.

B Internality

It is opposite of externality. The respondent may perceive himself or herself responsible for the stress, and may therefore express aggression towards himself or may blame himself. Similarly the respondent may expect solution for the stress from himself or herself. Internality may be high or low.

C Mode of Coping

The coping may either take the form of avoiding the stressful situation (reactive strategy)

or confronting and approaching the problematic situation (Proactive strategy). Both avoidance and approach strategies may comprise four alternate sub strategies. These respondents may have eight alternate coping styles.

1 Impunitive (M)

M has a combination of low internality, low externality and avoidance. This is fatalistic attitude. Statements indicating either simple admission of the stress, or indicating that the stress is unavoidable and nothing can be done about it are scored under this style.

2 Intropunitive (I)

I is characterised by high internality, low externality and avoidance. Blame and aggression is directed by the respondent to himself. Responses showing self-blame, remorse or guilt are scored I.

3 Extrapunitive (E)

E is characterised by low internality, high exterenality and avoidance. Both irritation with the situation, and aggression and blame for outside factors and persons are scored E.

4 Defensive (D)

D is characterised by high internality, high externality and avoidance with involvement of both self and others, but having avoidance mode, the respondent avoids aggression or blame by use of defence mechanisms. D is scored both for denial of stress, for rationalisation of stressful situation, and for benefits pointed out for the stress.

5 Impersistive (m)

m is characterised by low internality, low externality and approach. It relates to " expression given to the hope that time or normally expected circumstances will bring about the solution of a problem, patience and conformity are characterised" This interpretation is used to score responses as m.

6 Intropersistive (i)

I is characterised by high internality, low externality and approach. Statements showing that the respondent himself will take action in relation to a stress are scored I.

7 Extrapersistive (e)

e is characterised by low internality, high externality and approach. Statements of request made to someone to solve the problem, or indicating expectations that the solution will come from other people are scored e.

8 Interpersistive (n)

n is characterised by high internality, high externality and approach. It is opposite of defensive (D) style. This style is indicated in statements suggesting joint efforts, by the respondent and some others, to deal with stress.

Reliability and Validity of Role PICS

The role PICS is a standard semi-projective instrument for assessing a respondent's style to cope with role stress. Author had used a sample of fifty-two taken from a sample of 446 respondents. The mean values of the sample on the eight copying styles were almost the some as those of the total group. It was therefore concluded that the small sample of fifty-two was representative of the respondents. Reliability indices like Internal Consistency, stability Index and scorer reliability were used to test reliability and validity of the instrument.

Stability Index

The stability of the instrument to give similar results for the same subjects on different occasions has been found out by retest correlations. Author has used a sample of fifty two people responded on the test on two occasions, with a gap of two months. The mean, standard deviations, and retest correlations for different styles were calculated

and found that most correlations are significant at 0.01 level. One correlation is significant at 0.05 level (for an impersistive style) and one value was not significant (for intropunitive). The retest reliability coefficients show an acceptable levels of stability of the instrument.

Internal Consistency

Internal consistency of the instrument was tested by split-half correlations. The instrument (Twenty four situations) were split in two ways. It was divided into two halves by putting the first twelve situations in one half and the next twelve situations in another split half. It was also divided into the sections, one containing odd items and the other, even items (odd-even). Correlations were calculated between the two sections for fifty two respondents (author had used). The coefficients for split-half were found to be .71 and for odd-even .93. Both the coefficients are significant at .001 level.

Scorer Reliability

Interscorer reliability was also calculated and four scorers got responses from ten respondents. For each response there was six pairs of scores for ten protocols there were sixty pairs. The percentage of agreements were calculated. Later, two scorers discussed the differences and again scored another ten protocols. The percentage of agreement after discussion were further calculated. Inter-scorer reliability before discussion and after discussion were found reliable.

Correletes

Rajagopalan and Khandelwal (1998) found a positive correlation between role stress and avoidance style, and a negative correlation between role stress and approach style. These are consistent with the findings of other studies such as, Beehr and Gupta (1979) who reported role conflict and role ambiguity as related to withdrawal strategies, and Surti (1983) who found positive correlation between role stress and avoidance styles. While Srivastava (1991) found a higher incidence of mental ill-health in the

avoidance group compared to the approach group. The later was reported to experience more role stress than the former, probably indicating that people using approach coping strategies were more aware of stress than those using avoidance strategies.

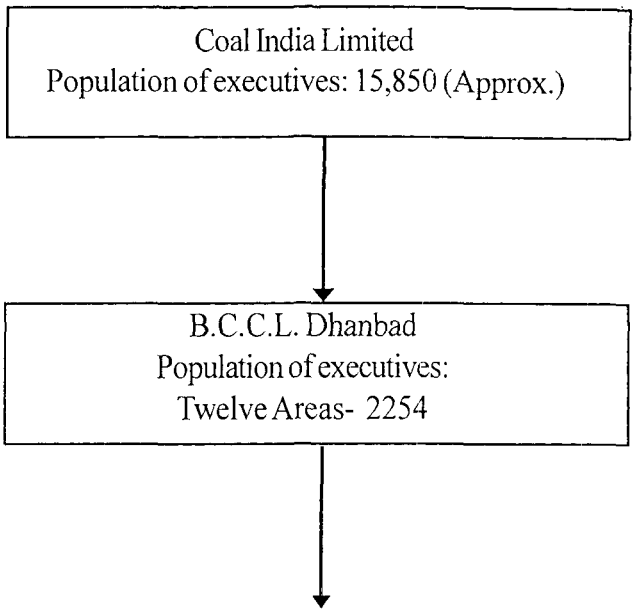
4.5. Sample selection

The study explores the issue of stress among coal industry executives. Coal India's subsidiary Bharat Coking Coal Limited, Dhanbad (BCCL) is the specific focus. BCCL is divided into twelve areas for effective control and productivity. Each area of BCCL is having six to seven mines and each mines [i.e. both under-ground mines (U/G) and open cast project mines (OCP)] are responsible for production. Total population of executives working in Coal India Limited is 15,850 (approx), and population of executives working in twelve areas of BCCL, Dhanbad is 2254 (Table 4.1).

The study initially included 300 coal Industry executives working in all twelve areas of BCCL. Sample selected for all twelve areas are about 10 to 12 percent of the population. The ORS questionnaire and Role PICS Instruments in a set were distributed among 300 exectives working in twelve areas of BCCL. Out of 300 set of questionnaire, only 262 were correct in all respect and this is sample size of this study. The process of sample selection has been explained in figure 4.1.

There may be a number of reasons for incorrect / poor responses ranging from difficulty in understanding the terms in part of questionnaire to unwillingness to disclose true feelings. The data so collected has been subject to analysis. It has been analysed in terms of various demographic and other relevant variables.

Figure- 4.1: Process of Sample Selection



Area Number	Name of the Area	Population of Executive	Questionnaire Distributed	Filled in questionnaire Collected
Area - I	Barora	186	21	18
Area - II	Block - II	182	19	18
Area - III	Gobindpur	195	22	21
Area - IV	Katras	183	26	22
Area - V	Sijua	187	29	27
Area - VI	Kusunda	198	34	29
Area - VII	P.B. Area	184	26	22
Area - XIII	Kustore	189	21	20
Area - IX	Bastacolla	188	33	27
Area - X	Lodna	187	29	25
Area - XI	E. J. Area	199	19	16
Area - XII	C. V. Area	184	21	17
Total		2254	300	262

Source: Corporate Plan, 90-95, Coal India Limited

4.6 Data Sources

For this research study, both primary and secondary data have been used. For the secondary data sources, studies covering Indian Coal Industry were scanned. But a major part of data was collected from Central Library of BCCL-Dhanbad, ISM-Dhanbad, D.G.M.S.- Dhanbad, CMRI - Dhanbad. Beside these libraries, the library of Bihar Institute of Technology-Sindri (Dhanbad), Cetral Mine planning & Design Institute, Branch-II, Dhanbad and Central Fuel Research Institute-Jamadoba (Dhanbad) were visited for this research study.

Content analysis was carried out for the analysis of projective instrument for coping strategies (Role PICS) . The responses gathered through Role PICS were classified according to the direction given in the scale and were content analysed to find out various respondent categories. The purpose was to identify respondents as using Approach coping style or Avoidance coping style. This was done to find out the relationship between coping styles and stress levels of respondents. Relevant statistical tools were then applied to establish the relationship. In this instruments, researcher collected responses of all respondents and content was grouped into two heads i.e. Avoidance coping style and approach coping style. For analysis of data distribution of various coping styles for 24 Role PICS situations, distribution of coping styles used in role stress categories and ranks of coping styles in role stress categories were calculated. Further, reliability of the instrument was tested by using correlation test.

4.7 Statistical Analysis

The data has been subject to analysis in the form of variables like Organizational Role Stress (ORS) Scores for Indian Coal Executives in which low, medium and high stress, comparison of ORS scores of Coal Industry Executives vis-a-vis other industry professionals, under-ground (U/G) vis-a-vis open cast project mines (OCP), hierarchy, length of service, education and age have been considered table 4.3 . The grouping was done to ascertain the differences between/among the groups. Findings were tabulated separately

Table 4.2 : Details of Variables for Data Analysis

Sl.No.	Variables	Details of Variables
01.	Education	Group A (P.G. , B. Tech, M.B.A.) Group B (Upto Graduation)
02	Hierarchy	Lower Level Executive (E2 & E3) Middle Level Executive (E4 & E5) Top Level Executive (M1,M2 & M3)
03	Age	Group A (25-35 Years) Group B (36-45 years) Group C (46-60 years)
04	Type of Working place	Under-ground Mines (U/G) Open cast Project Mines (OCP)
05	Length of Service	Group I (2-10 years) Group II (11 -20 years) Group III (21-30 years)

4.8 Limitations of the Study

Even though the reliability and validity of the questionnaires developed by eminent researchers are established and fairly high, effects of situational and extraneous variables can not be ruled out.

Being a large-scale study, involving several months for complete data collection, the time lag and rapid changes that were taking place during that period might have also influenced results. Macro environment prevailing at a specific time period influences the internal environment of organization. This research was conducted at a time when liberalisation was catching up in the economy. During this period, Coal sector was recently opened up for private players. So executives in the public sector coal companies were feeling tremendous pressure due to heightened completion.

CHAPTER – 5

Results and Discussion

Results and Discussion

The different sectors that contributes to a country's economy are Tertiary Sector Services, Secondary Sector - Manufacturing and Primary Sector- Agriculture, Fishery and Forestry. Every sector has some tangible as well as intangible characteristics. These characteristics shape executive's mindset and working environment. This study focused on Indian coal industry. It aimed at understanding the phenomenon of role stress in coal industry. To evolve a deeper understanding, the findings of the study were compared with the results of other similar studies conducted on various other occupational groups. This chapter has two sections, first part presents data analysis and discussion based on ORS-Scale Questionnaire. The second part contains of content analysis of the responses of projective instruments for coping strategies Role PICs developed by Pareek (1993).

5.1 Analysis of ORS-Scale Questionnaire

5.1.1 Organizational Role Stress (ORS) Scores

The study established that Indian Coal Industry was experiencing Organizational Role Stress (ORS). The mean score for total ORS is 40.96, which is at a moderate level. This inference is drawn on the basis of norms proposed by Pestonjee (1992), who reviewed various Indian studies on this account. He proposed following average scores for low, medium and high levels of ORS. The average scores are shown in Table : 5.1.

Table 5.1 Norms for ORS Score

Stressors	Low	Median	High
IRD	2	5	8
RS	2	5	8
REC	2	4	7
RE	7	9	12
RO	1	3	6
RI	3	6	9
PI	2	4	8
SRD	3	5	9
RA	1	3	7
RIn	2	5	8
ORS	25	49	82

Source : Pareek, 1993.

As far as individual stressors are concerned. Role Erosion (RE) has emerged as the most potent stressor with a mean score of 6.83. The Standard Deviation (SD) on this count is 3.00. This indicates that the problem is not confined to some groups or individuals only but is rather widespread. A possible reason for high RE can be attributed to the time period during which present study was conducted. Over the past years, the coal industry has achieved a steady growth and expansion. It is now facing stiff competition from new entrants in private sector. As a result public sector Coal Industry is in the midst of restructuring their operation to retain their leading position in the market. As a result many of the jobs are becoming redundant. This might explain the growing feeling of role erosion among executives .

The 2nd and 3rd most potent stressors are Inter Role Distance (IRD) and Role Isolation (RI) with a mean score of 5.29 and 4.48 respectively (Table 5.2). The Standard deviation (SD) of IRD is 3.80. Socio-cultural changes exhibit a trend towards nuclearisation of families which adds to various social obligations, an executives had to shoulder along with the immediate familial responsibilities. Neglecting 'off the job duties' creates a feeling of IRD.

Role Isolation (RI) is the 3rd potent stressor with a mean score 4.48. The SD value of RI is 2.78.The RI emerges when an executives, who performs his/her duties sincerely, does not get enough assistance or appreciation from his/her peers. subordinates and seniors. It creates a situation wherein an executives has a feeling of uncared for and loneliness This is called role isolation. Self-Role Distance (SRD) has emerged as fourth important stressor. It has a mean score of 4.14. The noteworthy factor has the high SD value of 3.21. It indicates a wide variation in scores of respondents on this account. It is found that a section of executives are suffering heavily on account of this stressor. Self-Role Distance has been reported as a major stressor in Indian ORS studies by different researchers like S. Kumar (1989)-public sector executives, Ahmad, Bhardwaj and Nirula (1985)-public sector and private sector executives. This conflict surfaces when the role under consideration goes against role occupant's self-concept .Role Overload (RO) followed by Role Ambiguity (RA) is the least contributor to overall organisational role stress.

Table 5.2 Overall ORS Scores

N=262

Stressors	Mean	SD	Rank	Low Stress		Medium Stress		High Stress	
				N	%	N	%	N	%
IRD	5.29	3.80	2	138	52.67	98	37.40	26	9.93
RS	3.62	3.18	7	190	72.52	66	25.19	06	2.29
REC	3.24	2.74	8	214	81.68	43	16.41	05	1.91
RE	6.83	3.00	1	82	31.30	154	58.78	26	9.92
RO	2.90	2.90	9	209	79.77	49	18.70	04	1.53
RI	4.48	2.78	3	163	62.21	90	34.35	09	3.44
PI	4.46	3.54	4	170	64.89	72	27.48	11	4.20
SRD	4.14	3.21	5	179	68.32	72	27.48	11	4.20
RA	2.34	2.60	10	229	87.40	30	11.45	03	1.15
RIn	3.77	3.26	6	189	72.14	63	24.05	10	3.81
ORS	40.96	21.81	-	194	74.05	68	25.95	00	00

Low Stress 0-6, Medium Stress 7-13, High Stress 14-20

The dispersion of the data (table 5.2) helps as understand the nature of stress and its intensity in coal industry executives. For this purpose, respondents were divided into three broad categories according to the varying intensity of stress, i.e.,

- Low Stress Group (0-6)
- Medium Stress Group (7-13)
- High Stress Group (14-20)

Figure 5.1a ORS scores across various stressors

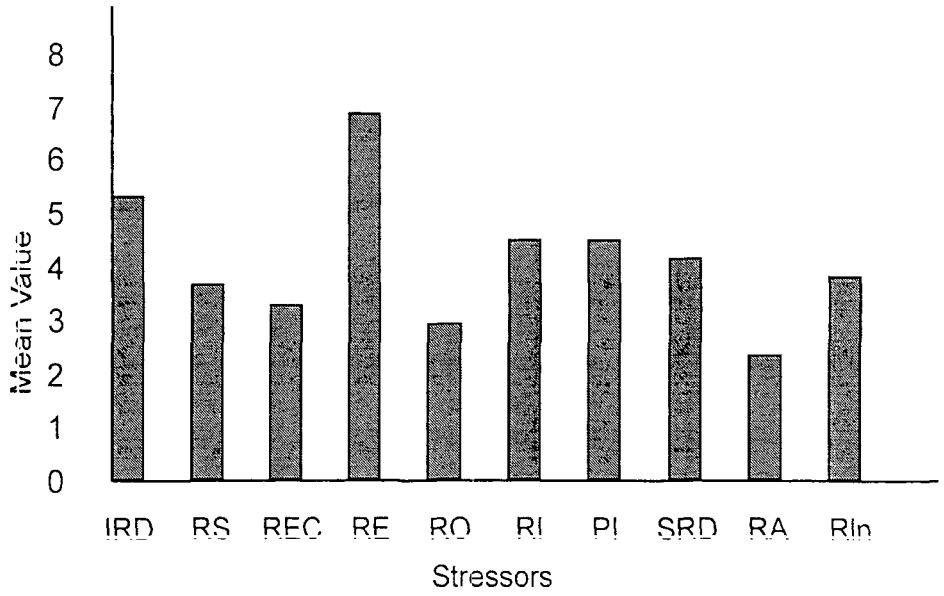
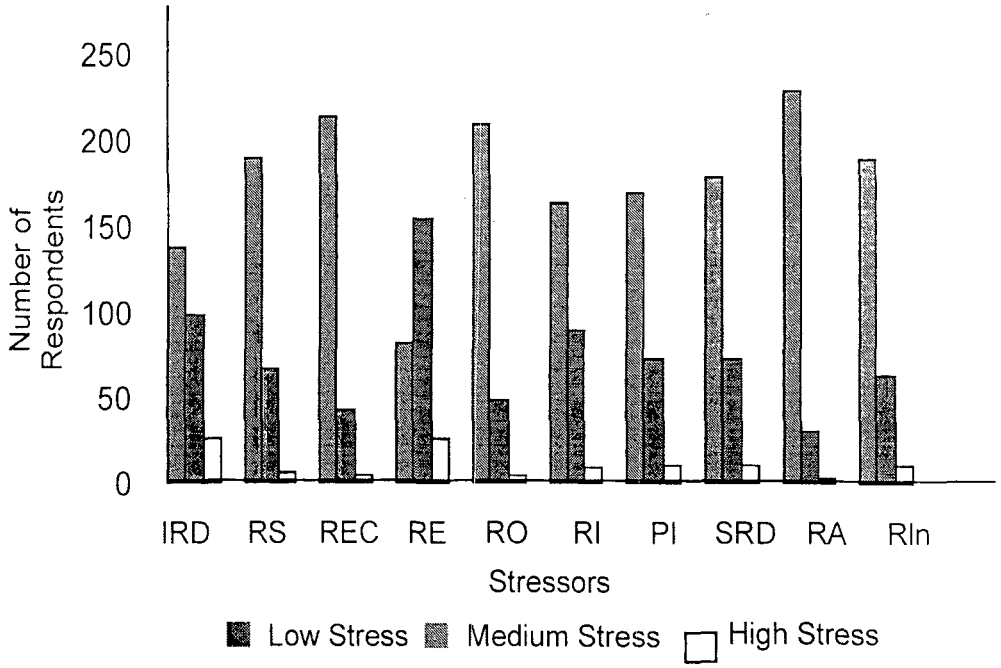


Figure 5.1b Distribution of respondents as per intensity of stress



Analysis revealed that none of the respondent fall in high stress category on the overall organizational role stress. Among individual stressors, substantial number of executives have reported high stress on account of Role Erosion (n=26), Inter Role Distance (n=26), personal Inadequacy (n=11) and Self Role Distance (n=11). However, majority of the executives have reported medium level of stress on Role Erosion (n=154) and Role Isolation (n=90). Overall ORS score is 40.96. 194 executives are in the low stress group, 68 executives comes under medium stress group and none are in higher stress group. Thus, null Hypothesis Ho1 stating *that there is no difference in the nature and intensity of stress among executive serving Indian Coal Industry is not accepted.*

5.1.2 Role Stress in Coal Industry Executives vis-a-vis other Industry Professionals

Comparison of ORS scores of the Coal Industry Executives obtained in this study with other studies carried out among varied occupational groups helps in understanding the magnitude and intensity of stress among Coal Industry Executives. Table 5.3 presents comparative ORS scores of Police (Talib, P. 1999), Public Sector Executives (Khanna, B.B. 1997); Working Women (Mathur, S. 1997); Public Sector Employees (Srivastava, A.K., 1997); and Air Traffic Controller's (Mishra, P.1996).

The analysis revealed the fact that the coal industry executives are comparatively low (40.96) on organizational role stress scale as compared to other occupational groups. The major share of Indian coal industry is in the form of government controlled public sector companies.

Table 5.3 Role Stress in Other Occupational Groups

Researcher		Khanna	Srivastava	Mathur	Present	Talib	Mishra
Occupational Groups		Pub. Sec. Executives	Pub. Sec. Employees	Working Women	Coal Industry	Police	A.T.C.
Stressor		N=600	N=48	N=400	N=262	N=178	N=120
IRD	Mean	5.39	6.19	7.39	5.29	12.04	12.89
	SD	4.44	4.49	4.69	3.80	4.71	2.2
RS	Mean	5.53	6.71	6.55	3.62	9.51	11.96
	SD	4.15	4.74	3.52	3.18	5.03	1.99
REC	Mean	4.66	6.77	4.98	3.24	8.67	7.89
	SD	3.64	3.82	3.36	2.74	4.31	2.6
RE	Mean	9.69	10.60	6.78	6.83	10.76	11.27
	SD	3.95	4.05	3.89	3.00	4.24	2.18
RO	Mean	4.09	4.98	7.24	2.90	7.35	11.7
	SD	3.9	3.99	4.38	2.90	5.09	2.02
RI	Mean	5.38	7.38	6.08	4.48	10.03	8.82
	SD	4.29	3.71	3.47	2.78	4.22	2.46
PI	Mean	5.17	6.75	6.04	5.58	6.98	5.42
	SD	4.35	4.45	3.86	3.54	4.75	2.79
SRD	Mean	5.44	7.92	6.06	4.14	8.37	10.02
	SD	4.42	4.62	3.72	3.21	4.57	2.21
RA	Mean	3.9	4.17	4.12	2.34	7.70	5.39
	SD	3.94	3.66	3.57	2.60	4.47	2.5
RIn	Mean	5.36	7.65	6.01	3.77	11.06	12.61
	SD	4.2	3.53	4.02	3.26	4.05	1.9
ORS	Mean	56.66	69.10	61.24	40.96	92.47	97.97
	SD	27.46	8.54	28.05	21.81	29.88	11.1

Source : Khanna (1997), Srivastava (1997), Mathur (1997), Talib (1999), Mishra (1996).

Chart 5.3a Key stressors across different occupational groups

Researcher	**Khanna**	**Srivastava**	**Mathur**	**Present**	**Talib**	**Mishra**
Occupational Groups	**Pub. Sec. Executives**	**Pub. Sec. Employees**	**Working Women**	**Coal Industry**	**Police**	**A.T.C.**
Stressor	**N=600**	**N=48**	**N=400**	**N=262**	**N=178**	**N=120**
	↓	↓	↓	↓	↓	↓
Three Leading Stressors (Rank Wise i.e. 1st, 2nd & 3rd)						
Stressor	RE	RE	IRD	RE	IRD	IRD
Mean	9.69	1.60	7.39	6.83	12.04	12.89
SD	3.95	4.05	4.69	3.00	4.71	2.2
Stressor	RS	SRD	RO	IRD	RIn	RIn
Mean	5.53	7.92	7.24	5.29	11.06	12.61
SD	4.15	4.62	4.38	3.80	4.05	1.9
Stressor	SRD	RI	RE	RI	RE	RS
Mean	5.44	7.38	6.78	4.48	10.76	11.96
SD	4.42	3.71	3.89	2.78	4.24	1.99
Least Contributing Stressor						
Stressor	RA	RA	RA	RA	PI	RA
Mean	3.9	4.17	4.12	2.34	6.98	5.39
SD	3.94	3.66	3.57	2.60	4.75	2.5
Total ORS Scores						
Mean	56.66	69.10	61.24	40.96	92.47	97.97
SD	27.46	8.54	28.05	21.81	29.88	11.1

Source : Khanna (1997), Srivastava (1997), Mathur (1997), Talib (1999), Mishra (1996).

Public sector coal industry in India has enjoyed a long period a protected market. From the year 1991 onwards, as liberalization has set in, the government of India has started modifying regarding coal regulation in the country. The entry of private companies has created ground for competition. Therefore the present low stress score may turn into medium and high scores in the near future, as the stress on executives for better performance is bound to increase.

In order to explore this issue further, the findings of the present study were compared with other similar group studies viz. Khanna's (1997) study on public sector executives and Srivastava's (1997) study on public sector employees. In the present study, ORS score is lowest among all other occupational group studied. While comparing with other public sector, there is variation in total ORS compared with other public sector studies. For instance, Role Erosion (RE) has emerged as the most potent stressor for all three public sector respondents (Table 5.5.a). Common work culture and employees attitude in public sector companies might be responsible for this similarity. Interestingly, for women, role overload emerged as a second most potent stressor for working women. It reflects that the professional career of women is perceived as contributing to work overload.

The discussion reveals the fact that the nature of stress among public sector is somewhat similar. However, when these results are compared with other sectors or occupational group, a different picture emerges. The nature and quantum of stress in these occupational groups is different.

Thus, null Hypothesis, Ho2 stating *that there is no difference in the nature and quantum of stress among coal sector professionals vis-à-vis other occupational groups is not accepted.*

5.1.3 Analysis as per Education

For the purpose of analysis on the basis of education of respondents, the sample was

divided into two groups : respondents having higher level of education (Group A, n=166) and respondents having lower level of education (Group-B. n=92). The group A consists of employees who are Post Graduates or having professional degree viz. Law, M.B.A., B. Tech or Doctorate. The group B includes those who are Graduate / below or have some short-term diploma courses with their graduation degree. The sample for the analysis on the basis of education is 258 out of population of 262. Since four respondents did not disclose their educational qualifications.

The analysis of stress of respondents on the basis of education reveals that respondents with limited educational exposure (i.e. Group-B) are experiencing high level of stress (45.40) than Group A (38.94). The difference between two groups is significant on overall ORS. The Significant differences are observed on specific role stressors as well like Role Expectation Conflict (t=2. 542, p=0.0002), Role Erosion (t=1.793, p.=0.016), Role Isolation (t=2.628, p=0.0008), Self Role Distance (t=2.087, p=0.008) and Resource Inadequacy (t=1.743, p=0.024). Among them, stressors that are highly significant at 0.01 level (lower limit of t-value is 2.072) are REC, RI and SRD. Other stressors which are significant at 0.02 level (lower limit of t-value is 1.872) are total ORS (t=2.000, p=0.008) and RE, Resource Inadequacy has emerged comparatively less significant stressor at 0.05 level (lower limit of t-value is 1.576).

Understanding differences in scores of respondents on this account is important. In the present study, respondents has been divided into two groups viz. those who are both highly educated and possess relevant skills and those who have low levels of education and might lack basic skills. This particular phenomenon is called as skill based polarization (Jex, 1998). which has an important organizational implication like increase in organizational role stress.

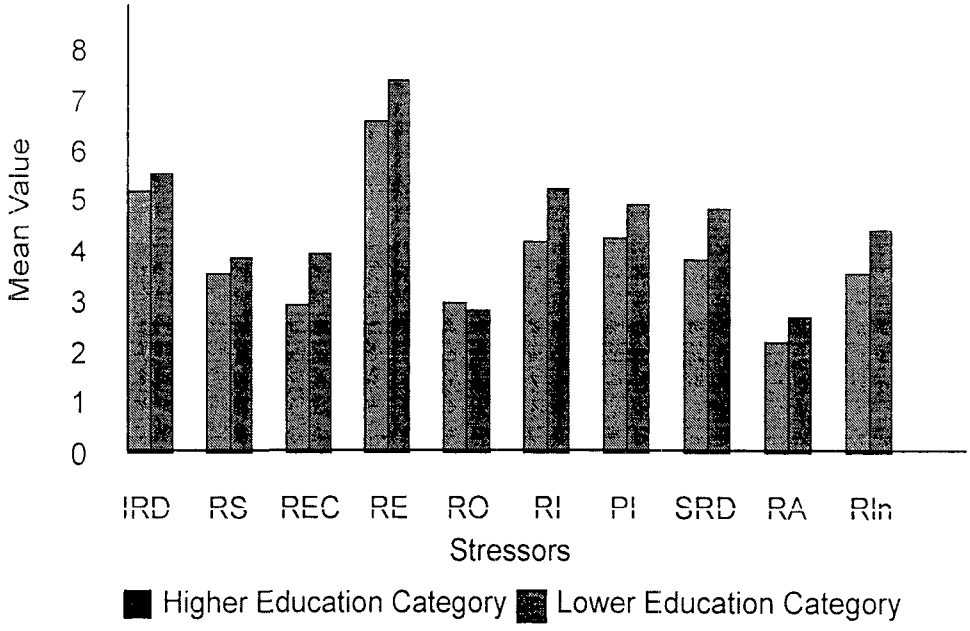
Table 5.4 ORS Scores as per education

df=258

Factors	Educational Category Group-A, (N=166)			Educational Category Group-B, (N=92)			t-value	p-value
	Mean	SD	Rank	Mean	SD	Rank		
IRD	5.18	3.66	2	5.51	4.16	2	0.602	0.36
RS	3.53	3.11	6	3.86	3.39	8	0.698	0.30
REC	2.90	2.70	8	3.92	2.73	7	2.542	0.0002**
RE	6.56	2.96	1	7.36	3.07	1	1.793	0.016*
RO	2.94	2.97	7	2.78	2.378	9	0.358	0.52
RI	4.14	2.60	4	5.21	3.05	3	2.628	0.0008**
PI	4.25	3.49	3	4.90	3.67	4	1.246	0.096
SRD	3.81	3.02	5	4.80	3.54	5	2.087	0.008**
RA	2.18	2.68	9	2.67	2.46	10	1.245	0.096
RIn	3.53	3.24	6	4.37	3.24	6	1.743	0.024*
ORS	38.94	21.57		45.40	22.08		2.000	0.008**

*Significant at 0.05 ($p < 0.05$), ** Significant at 0.01 ($p < 0.01$)

Figure 5.2 ORS Scores as per education



A total of five stressors have been found significant as per educational profile of respondents. Among them, Role Expectation Conflict (REC) is most significant at .01 Level. Group B who are comparatively less educated workforce scored high on REC than Group A. In absence of higher level professional degree, these people are considered as non- professionals. They might require more time for doing a task. This leads to accumulation of qualitative and quantitative workload as more time is taken in order to perform acceptable quality of work. This might generate dissatisfaction among role senders. Therefore, it has a potential of creating a role expectation conflict.

Score on role Isolation (RI) is also found to be significantly different for two groups. Role isolation arises when a person has a weak bond between his / her role and some other roles in the organization. Assistance and co-operation is sought from peers and senior executives by executives with limited educational background. If the required support is not made available it creates a feeling of loneliness among them. This creates role isolation.

Scores on Self Role Distance (SRD) have also exhibited a significant difference for two educational categories. This type of stressor arises when the present role is against the self-concept of the role occupant. Most likely, the match between organizational and executives values could impact performance in two ways. First, a mismatch in values may reduce motivation which subsequently decreases performance. Second, a mismatch in values may lead an executive to direct his / her efforts in wrong direction. Without having any professional degree and specialization they are treated as 'Generalist Cadre Workforce '. This often results in situations where these executives are asked to perform various and diverse roles from time to time and this leads to value conflict.

The fifth stressor on which significant differences have been found is Resource Inadequacy (RIn). In this situation generally support system like spare parts of machines of safety items and of welfare related items are not available, in time. This

creates a situation of Resource Inadequacy (RIn).

The Null Hypothesis Ho3 stating *that there are no difference in quantum and type of stress among different educational levels is not accepted for overall organizational role stress (ORS)). In individual stressors category it is not accepted for Role Expectation Conflict (REC), Role Erosion (RE), Role Isolation (RI), Self Role Distance (SRD), and Resource Inadequacy (RIn) also. However it is accepted for inter Role Distance, Role overload, Personal Inadequacy and Role ambiguity.*

5.1.4 Analysis as per Hierarchy

For the purpose of analysis on the basis of hierarchy, the sample was divided into three groups: the lower management, middle management and top management (Table 5.5). There were 90 respondents in lower management category, 101 in middle management and 71 in top management category. The lower management category included E2 and E3 grade officers, middle management category comprised of E4 and E5 grade officers and the top management included M1, M2 and M3 grade officers.

Analysis on the basis of hierarchy revealed no significant differences on overall ORS score as the mean scores on ORS for lower management (42.48) and middle management (42.35) were almost found to be similar. Top management (37.28) scored relatively low on overall ORS Score.

For constituent stressors, the analysis revealed significant differences on Role Erosion (RE) and Role Isolation (RI). On the other stressors no significant differences have been reported. It is important to not here that Role Erosion is not only significant but also has high scores in all individual stressors category among different hierarchical groups. The Role Erosion (RE) is significant at .01 level (F=5.883) while Role Isolation is significant at .5 level (F=2.762).

The emergence of Role Erosion (RE) as a potent stressor among hierarchical groups can be understood as Role Erosion is experienced because of a number of reasons. It occurs when some important functions are transferred to some other role occupant. It also surfaces when an important post holder is transferred to a less important location or given a less important assignment and also when someone else takes the credit of a job being performed by role occupant. It results in a feeling of injustice and leads to role erosion. Sometimes it is seen that a role occupant may desire to contribute more to the present job but in a situation when the executives are underutilized, it also creates a feeling of role erosion.

Another significant factor that emerged for different hierarchical group was Role Isolation (RI), essentially as extension and outcome of the Role Erosion stress. Role Isolation arises when a role occupant feels a psychological difference between self-role and others roles in the same role set. Looked from another perspective when role linkages are weak, role isolation is high. The mean score for middle level employees (4.90) was higher than other two hierarchical groups i.e. 4.48 for lower management and 3.90 for top management.

It reveals that middle level executives suffer most on this account since middle level executives work as a connecting link between upper and lower hierarchical levels.

Lack of cooperation with superiors and subordinates and among peers contributes to role isolation stress. A striking thing observed in the context of executives of coal industry was lack of team spirit especially in terms of relationship of trust amongst seniors and juniors. The junior level executives reported the attitude of their senior's as of non-co-operation. As a result they experienced a feeling of lack of coordination and loss of direction.

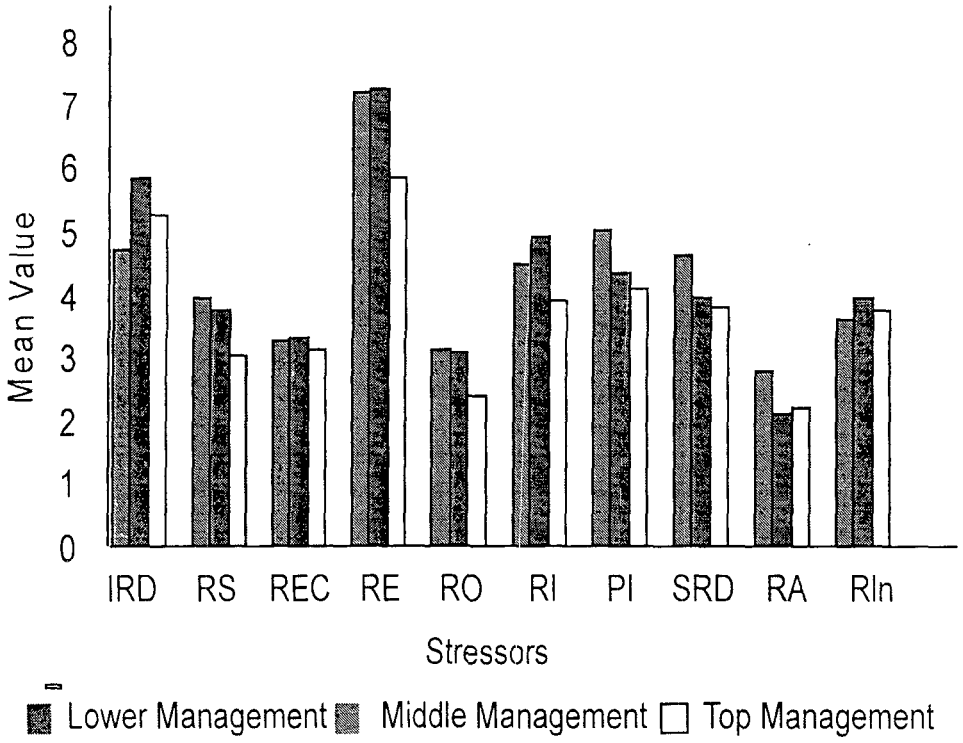
Table 5.5 ORS Scores as per hierarchical groups

df=262

Factors	Lower Management (N=90)			Middle Management (N=101)			Top Management (N=71)			F-value	P-value
	Mean	SD	Rank	Mean	SD	Rank	Mean	SD	Rank		
IRD	4.70	3.79	3	5.82	3.82	2	5.26	3.72	2	2.063	0.062
RS	3.94	3.22	6	3.75	3.30	7	3.02	2.94	7	1.805	0.085
REC	3.26	3.00	8	3.31	2.85	8	3.11	2.17	8	0.12	0.689
RE	7.20	2.78	1	7.22	3.33	1	5.81	252	1	5.883	0.0008
RO	3.10	3.08	9	3.07	2.99	9	2.39	2.44	9	1.521	0.121
RI	4.48	2.83	5	4.90	2.98	3	3.90	2.28	4	2.762	0.026
PI	4.97	3.76	2	4.30	3.73	4	4.06	2.87	3	1.505	0.123
SRD	4.62	3.12	4	3.94	3.54	5	3.80	2.76	5	1.614	0.108
RA	2.76	2.46	10	2.10	2.80	10	2.16	2.38	10	1.692	0.098
RIn	3.61	3.29	7	3.93	3.26	6	3.75	3.75	6	0.230	0.60
ORS	42.48	23.90		42.35	20.91		37.28	19.98		1.445	0.133

F Critical : 2.4250768

Figure 5.3 ORS Scores for different hierarchical groups



It is pertinent to analysis variations in scores on other stressors as well. Role Overload (RO) was found least important for the all hierarchical groups. Its mean and SD value for lower management were 3.10 and 3.08. For middle management it was 3.07 and 2.99. It had lowest value for top management i.e. 2.39 and 2.44 respectively. The standard deviation (SD) value has been found rather high in all three hierarchical categories for this stressor. It suggests that a section of executives in all three hierarchical groups have been experiencing high stress. This indicates that a section of executives shoulder major share of work related responsibilities. Another stressor, Role Ambiguity (RA), is also a least contributor to stress. But middle management and top management SD values were higher than the mean scores. Findings with respect to role overload might explain this phenomenon as well. In a workforce, there are some executives who are duty conscious and also have inability to say "no" as they believe that their

refusal might upset others. As a result this group of executives is likely to experience role overload as well as role ambiguity on an ongoing basis.

The Null Hypothesis Ho4 stating *that there is no difference in quantum and type of stress among different hierarchical levels is not accepted for Role Erosion (RE) and Role Isolation (RI). However, it is accepted for overall Organizational Role Stress (ORS), Inter Role Distance (IRD), Role Expectation Conflict (REC), Role Stagnation (RS), Role Overload (RO), Personal inadequacy (PI), Self Role Distance (SRD), Role Ambiguity (RA) and Resource Inadequacy (RIn).*

5.1.5 Analysis as per Age

For analysis on the basis of age of respondents, three groups were formed. First group including young respondents aged between 25-35, the middle age group comprising of respondents between age group 36-45 years and older age group having respondents between the age group 46-60 and above.

The analysis on the basis of age shows significant (f=2.416 and p=0.040) difference in all three age groups (Table5.6) on total ORS scores. The younger executives (n=38) (ORS score of 43.74) and middle aged executives (ORS score of 43.16) have been found most stress group than higher age group executive (ORS score of 37.22). These three groups exhibit differences on standard deviation (SD) scores as well. The SD score for higher aged executives was rather high which indicate that the problem of organizational role stress (ORS) was only confined to a section of executives in high age category. The younger executives have reported high scores on Role Stagnation (RS) and Self Role Distance (SRD) also. As far as individual stressors are concerned, Role Stagnation (f=3.683, p-.0.008), Personal Inadequacy (F=6.373, p=.OOO) and Self Role Distance (F-5.860, p=0005) have been found significantly different for age groups. A similar result was' found in a study on public sector organization carried out by Srivastava (1997).

Age has a significant bearing on Role Stagnation (RS). Self Role Distance (SRD), Resource Inadequacy (RIn) and total ORS. On the other hand, some evidence of the contrary have also been reported. A study on public sector by Khanna (1997) found negative relationship between age and organizational role stress. This different inferences may be explained on the basis of time period of study, target group, organization's work culture and types and nature of organization.

Lower and middle age groups generally shoulder broader set of responsibilities like caring the old parents, career growth, upbringing child and other societal duties. Age is something that creeps in. Cooper & Cartwright (1997). From mid 20 to 40 people move into their life's 'establishment phase", This stage represents a period when the need to achieve and prove oneself is often very interval of 36-45. Respondents in the middle age of their life are required to balance organisational demands and other non organisational demands. Past research confirms that with increasing age people look forward to stability in their work (Sleeper, 1975). Existing stress is further aggravated by mid life crises. Higher age group has reported higher SD value on total ORS which also indicates that some executives in the age group of 48 or more are still negotiating various types of stress.

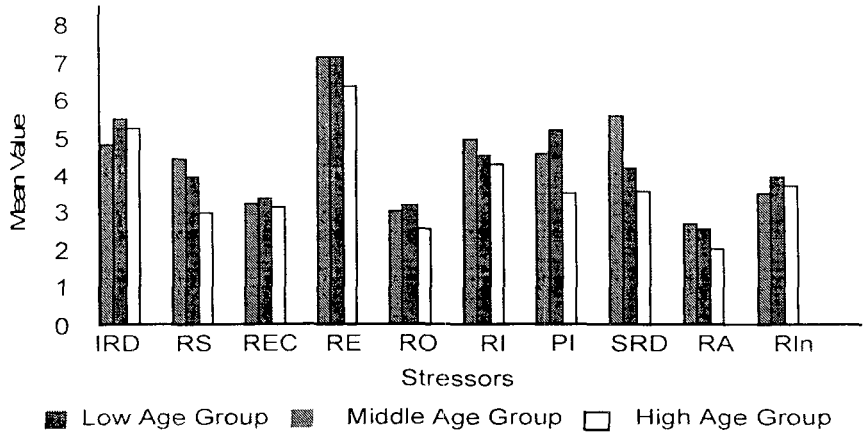
Table 5.6 ORS Scores for different age groups

df=262

Factors	Age Group-I (N=38)			Age Group- II (N=126)			Age Group-III (N=98)			F-Value	P-Value
	Mean	SD	Rank	Mean	SD	Rank	Mean	SD	Rank		
IRD	4.82	3.77	4	5.46	3.85	2	5.26	3.78	2	0.144	0.478
RS	4.4	3.60	6	3.91	3.24	7	2.96	2.83	8	3.683	0.008
REC	3.20	2.87	8	3.35	2.86	8	3.11	2.52	7	0.211	0.614
RE	7.14	3.42	1	7.12	2.80	1	6.34	3.03	1	2.154	0.055
RO	3.02	2.70	9	3.14	3.02	9	2.54	2.78	9	1.228	0.174
RI	4.94	2.72	3	4.50	2.69	4	4.29	2.90	3	0.753	0.013
PI	4.57	3.39	5	5.18	3.91	3	3.51	2.82	6	6.373	0.000
SRD	5.58	3.59	2	4.18	2.91	5	3.53	3.26	5	5.860	0.0005
RA	2.65	2.64	10	2.51	2.63	10	2.00	2.52	10	1.376	0.145
RIn	3.50	2.81	7	3.92	3.33	6	3.68	3.34	4	0.307	0.546
ORS	43.74	20.90		43.16	23.16		37.22	19.92		24.16	0.040

F Critical=2.4250768 Age Group I : 25-35, Group II : 36-45, Group III 46-60

Figure: 5. 4, ORS Scores for Different Age Groups



Among individual stressors, Role Stagnation (RS) has emerged as significant stressor. It is a feeling of being stuck at the same position or location for a long period of time. It results from lack of opportunity for career progression. Apart from management's policy on promotion, some executives prefer to stay at the same location for a long time due to family constraints. This is likely to contribute to role stagnation. Here, role stagnation is inversely related to age, the more the age the less is the level of role stagnation. Sen (1981) also concluded that advancement in age is correlated with decrease in role stagnation.

Role overload has not emerged as a significant factor for different age groups. However noticeable variation has been found in higher age group. It is a pointer to the fact that some top executives are shouldering more than their fair share of responsibility.

Significant differences have been reported on Personal Inadequacy (PI). Another study on Insurance and Banking sector professionals carried out by Pattanayak & Mishra (1997) had also reported significant differences between younger and older employees on experiences of inequity, job difficulty and inadequacy. A sense of inadequacy or powerlessness can be extremely stressful. Personal inadequacy is perceived as absence of competencies in the role occupant as required for effective role performance (Ivancvich, 1986). Among all three age groups the middle age (5.18) respondents have scored high on personal inadequacy than lower (4.57) and higher age group (3.51). Further investigation revealed that for lower age category, size of respondents is only 38. In public sector coal industry, the proportion of young executive is comparatively less. Most of the executives falls in the age interval of 36-45. Respondents in the middle age of their life are required to balance organizational demands and other non organizational demands. Past research confirms that with increasing age people look forward to stability in their work (Sleeper, 1975).

Another important stressor for different age group category is Self Role Distance (SRD). SRD is found to be inversely related to age. It means that SRD decreases as people grow old. The feeling of self-role distance develops when the present role goes

against one's self-concept. It is a situation of mismatch between the person and his job. It is observed that higher-level executives often engage their young executives for different purposes. This might contribute to self-role distance stress as well.

The Null Hypothesis, Ho5 stating *that there is no different in quantum and type of stress among professionals having different age is not accepted for Organizational Role Stress (ORS), Role Stagnation (RS), Personal Inadequacy (PI) and Self-Role Distance (SRD). However, it is accepted for Inter Role Distance (IRD), Role Expectation Conflict (REC), Role Erosion (RE), Role Overload (RO), Role Isolation (RI), Role Ambiguity (RA) and Resource Inadequacy (Rln).*

5.1.6 Analysis as per type of work place

For analysis on the basis of types of working place, two groups have been selected on the basis of nature of work place i.e. open cast project mines (O.C.P.) and underground-mines (U/G) The total number of respondents in both categories is 262. Among them, 80 respondents were serving in underground mines while the figure for open cast project mines was 182.

Under-ground mines (U/G) duty executives (43.10) have reported higher level of stress than open cast project mines (O.C.P.) executives (40.13) on total ORS scores (Table 5.7), High SD value of total ORS for under-ground mines (U/G) executives indicates that the problem of role stress in not widespread. It is rather specific. The researcher attempted explanation of this phenomenon. Underground mines (U/G) executives are working against nature using manual mining technology as well as semi-mechanised mining technology for production of coal. During this, there is always danger of life due to roof fall, poisonous gas emission, water inundation and mine explosion etc. Whereas open cast project mines (O.C.P.) executives are working on surface with problems of dust, heat, rain, etc. but safer than under-ground mines (U/G) executives.

The analysis on the basis of type of working place shows significant differences on four individual stressors viz, Inter Role Distance (t=2.777. p0.0008), Role

Erosion (t=1.95, 0.012). Personal Inadequacy (t=1.697, p. 0.028) and Self Role Distance (t=2.420, p0.0002).

Among individual stressors, significant differences have been observed on Inter role Distance (IRD), Role Erosion (RE), Personal Inadequacy (PI) and Self Role Distance (SRD). Underground mines executives reported higher level of stress than open cast project mines executives on IRD on these stressors.

Table 5.7 ORS Scores for O.C.P. vis-a-vis U/G executives

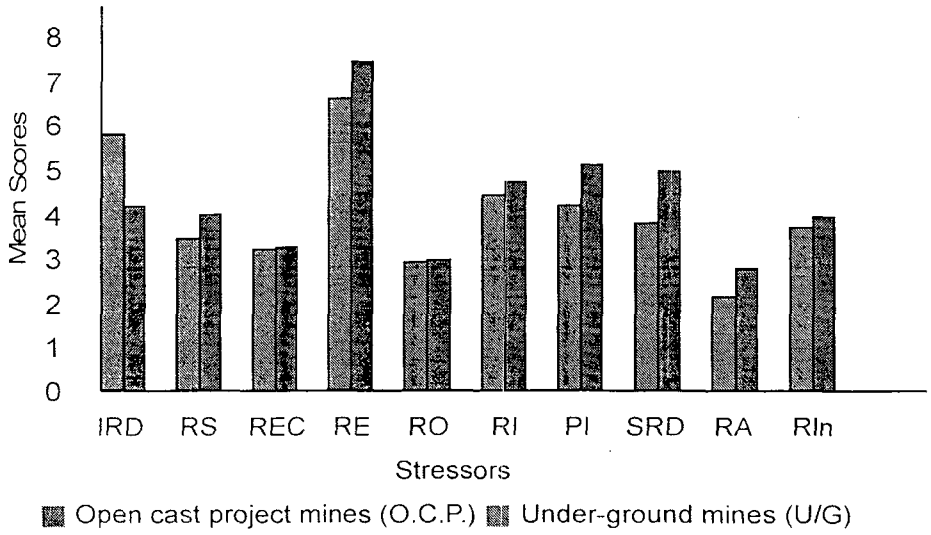
df=262

Factors	Open cast project mines (O.C.P.) (N=182)			Under-ground mines (U/G) (N=80)			t-value	p-value
	Mean	SD	Rank	Mean	SD	Rank		
IRD	5.76	3.91	2	4.19	3.34	5	2.777**	0.0008
RS	3.46	3.24	7	3.98	3.05	6	1.073	0.145
REC	3.22	2.65	8	3.27	2.96	8	0.109	0.174
RE	6.57	3.00	1	7.44	2.93	1	1.959*	0.012
RO	2.89	2.83	9	2.94	3.07	9	0.110	0.713
RI	4.39	2.79	3	4.68	2.74	4	0.680	0.317
PI	4.19	3.50	4	5.08	3.58	2	1.697*	0.028
SRD	3.79	3.10	5	4.94	3.34	3	2.42**	0.0002
RA	2.15	2.56	10	2.78	2.65	10	1.642	0.033
RIn	3.70	3.22	6	3.92	3.36	7	0.458	0.454
ORS	40.13	20.91		43.10			0.901	0.209

*Significant at 0.05 ($p < 0.05$), **Significant at 0.01 ($p < 0.01$)

The high stress score for U/G executives is worth discussing. The size of the underground mines is rather big vis-a-vis open cast project. So it might be difficult for underground mines to pay attention to off the job problems. Numbers of underground mines are also more as compared to open cast mines. On relocation, sometimes executive gets rural or semi urban mines. This might come in the way of good education for their children.

Figure 5.5, ORS Scores for open cast project mines (O.C.P.) & under-ground mines (U/G) executives)



Significant differences have been observed on Role Erosion (RE) as well. RE score of under-ground duty executives is more than that of open cast project mines executives. Under-ground mines has its characteristics. If an executives is transferred to some other under-ground mines, then, it contributes, to the feeling of Role Erosion among under-ground mines executives. This might have created a feeling of Role Erosion for the under-ground mines duty executives.

Work profile of under-ground mines executives is diverse and varied. Often there are different laws for each mines. Gaining mastery over those item is a difficult task. This might explain higher score on Personal Inadequacy (PI) among the under-ground mines executives. There are excessive rules and regulations for safety and production which creates, a feeling of frustration and helplessness among executives. Excessive rules and regulations also hamper the progress of work as time taken to perform the work

is more. The tradition of routine processing might retard quick learning on vital aspects among executives.

Scores on self role Distance (SRD) has also been significantly different between these two groups. Under-ground mines duty executives have particularly scored high on Self-Role Distance. Under-ground duty executives varies from mines to mines. For a mine, It varies according to coal field area and residential area. So under-ground mines executives may find it difficult to match their personal orientation with varied nature of tasks to be performed among underground duty executives. When present role goes against one's self concept then it creates a feeling of self-role distance.

Analysis revealed that underground (U/G) duty executives have reported higher level of stress (40.10) than open cast project (OCP) duty executives (40.13) on total ORS score. Among individual stressors, significant differences have been observed on Inter Role Distance (IRD), Role Erosion (RE), Personal Inadequacy (PI) and Self Role Distance (SRD). However, no significance difference have been observed on Role Stagnation, Role Expectation Conflict (REC), Role Overload (RO), Role Isolation (RI), Resource Inadequacy (RIn) and Role Ambiguity (RA).

The Null Hypothesis, Ho6, stating *that there is no difference in quantum and type of stress among underground duty executives and Surface duty executives is not accepted for Inter Role Distance (IRD), Role Erosion (RE), Personal Inadequacy (PI) and Self-Role Distance (SRD). However, it is accepted for Organizational Role Stress (ORS), Role Stagnation (RS), Role Expectation Conflict (REC), Role Overload (RO), Role Isolation (RI), Resource Inadequacy (RIn) and Role Ambiguity (RA).*

5.1.7. Analysis as per length of service

Normally, initial period of executives in organization is spent in getting introduced to organization, learning and developing practical skills related with their job. After learning period, executive become matured and they contribute to organization. Last phase of

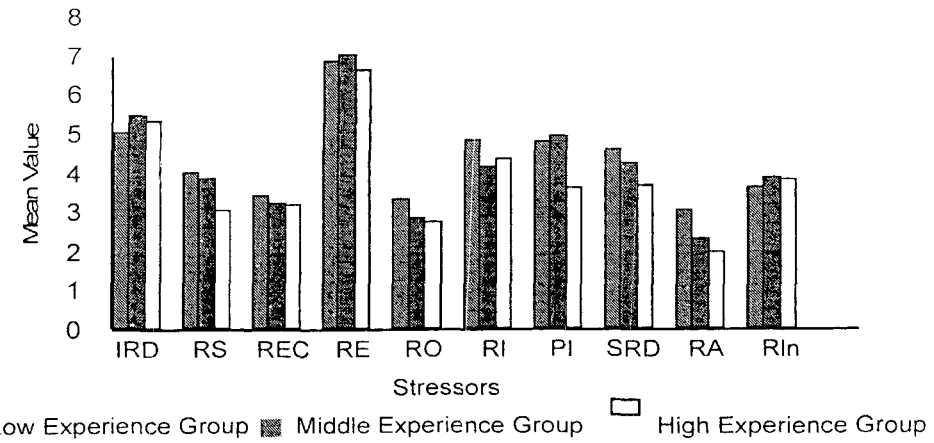
executives belongs to pre-retirement period in which they plan for their impending retirement.

Table 5.8 ORS Scores as per length of service

Factors	A (N=67)		B (N=117)			C (N=78)			F-value	P-value
	Mean	SD	Rank	Mean	SD	Rank	Mean	SD	Rank		
IRD	5.00	3.85	2	5.45	3.85	2	5.28	3.73	2	0.282	0.562
RS	3.97	3.51	6	3.81	3.20	7	3.02	2.80	8	1.964	0.0696
REC	3.39	2.84	8	3.22	2.78	8	3.14	2.59	7	0.153	0.661
RE	6.86	2.98	1	6.98	3.00	1	6.57	3.04	1	0.466	0.447
RO	3.30	3.27	9	2.80	2.63	9	2.70	2.91	9	0.906	0.258
RI	4.80	3.03	3	4.14	2.59	4	4.31	2.81	3	0.624	0.367
PI	4.77	3.89	4	4.88	3.60	3	3.57	2.96	6	3.589	0.0096
SRD	4.54	3.17	5	4.23	3.17	5	3.65	3.28	5	1.506	0.0123
RA	2.99	2.82	10	2.26	2.40	10	1.96	2.61	10	3.300	0.014
RIn	3.60	3.05	7	3.85	3.39	6	3.80	3.24	4	0.128	0.682
ORS	43.24	23.90		41.77	21.42		37.95	20.34		1.186	0.182

F Critical = 2.4250768. A : 2 -10 Years, B : 11-20Years, C : 21-30

Figure 5.6 ORS scores for varying length of service



In case of Indian Coal Industry, normal service period of executives is 30 years. Therefore, we have divided executives into three groups considering length of service i.e. 2-10 years, 11-20 years, 21-30 years.

In order to study the relationship between length of service and respondents, three groups were formed: respondents having experience between 2-10 years (Group A), respondents having length of service between 11-20 years (Group B) and respondents having length of service between 21-30 years (Group C).

The analysis on the basis of length of service shows no significant (F=1.186 and p=0.182) difference in all three groups (Table5.8) on total ORS scores. The less experienced group (2-10 Years) has scored high on overall ORS scores. Here, length of service is inversely related to overall organizational role stress (ORS) score. A study by Srilatha (1988) on government sector employees found that managers with job tenure of 18-25 years of experiences perceived greater degree of role stress than those whose job tenure were below or above this range.

If we compare the findings of this study that of Srilatha (1988), we find a similarity as also difference. Present study reports higher level of stress for executives with less experience. However, this study also reports a reduction in stress as people get more experience of the job.

A noticeable difference has been observed among more experienced group with respect of their scores on Role Overload (RO). In this case, the SD score is higher than the mean score. It implies that some executive in the experienced group end up shouldering most of the job related responsibilities. As organization's dependability on them increases, the consequent work related burden also increases.

Score on Personal Inadequacy have also been found different for respondents having varying length of service. It was found significant for executives of different age group as well. Respondents in the second group (11-20)years of experience have scored high (48.8) on this account. At this stage, an executives gradually develops a feeling of

"learning disability." This type of feeling might cost dear to organization.

A significant relationship has also been found between Role Ambiguity (RA) and tenure of service. Role Ambiguity is inversely related to length of service, Role ambiguity arises when role related information is not very clear. The general economic climate of 90's and after forced industries to resort to cost cutting measures. The cost cutting measures focused on keeping human resources cost to a minimum. This obviously changed the old recruitment pattern and created a situation of manpower Shortage. To resolve this shortage of human resources, organizations gradually increased responsibilities on their younger or less experienced executives. Shouldering multifunctional responsibilities at one time causes feeling of role ambiguity. A study on middle level executives carried out by Srilatha (1988) found significant correlation between Role Ambiguity and performance indicating that high Role Ambiguity adversely affects the overall performance. Schuler (1977) found similar evidence that Role Ambiguity had a negative impact on job performance amongst those who lacked relevant job experience.

The Null Hypothesis, Ho7, stating *that there is no difference in quantum and type of stress among professionals having different length of service is not accepted for Personal Inadequacy (PI) and Role Ambiguity (RA). However, it is accepted for total Organizational Role Stress (ORS), Inter Role Distance (IRD), Role Overload (RO), Role Isolation (RI), Self-Role Distance (SRD), Role Ambiguity (RA) and Resource Inadequacy (RIn).*

The analysis & discussion presented above leads us to infer that respondents with less education, who are young and are part of lower hierarchy level and who have served the organization for limited length of service are more stressed than their counterparts. Such executives generally have limited internal resources to cope with role demands, as compared to executive at higher levels. With age and experience, as they gain maturity coupled with added power and authority they develop

greater internal strengths to negotiate job stress. In addition to this, underground executives (U/G) are working under greater stress than open cast project mine (OCP) executives.

5.2 Coping strategies (Role PICS)

As stated in our objectives one of the aim of this study was proposing remedial measures for the executives working in coal industry so that they can handle their stress effectively. In order to achieve this objective, the first step was to explore how the executives presently handle their stress, as this could form the basis of effective stress management. A standardized psychological tool was administered to find out how coal industry executives cope with the stress. Role PICS developed by Udai Pareek was used as the tool for assessing existing coping strategies. Details about Role PICS have already been given in the chapter on research methodology. The data obtained through Role PICS is qualitative in nature. It was subjected to content analysis for interpretation. In the questionnaire a respondent is expected to give response in form of statement to a given situation.

A representative sample of such responses have been presented in table 5.9. It has been done to give an idea about the statement that have been used by the respondents to communicate their feelings in the context of the role stress situations that has been pictorially depicted in the questionnaire. These may be considered as sample responses only. Other respondents have used other words and sentence to communicate essentially the same feelings.

Our assumption that different executives use varying strategies to cope with stress has been validated by the data analysis as it was observed that both Approach and Avoidance coping styles were used by the respondents. It may be noted here approach is the functional way to cope with stress while avoidance is the dysfunctional way.

5.3 Distribution of coping styles

At the first stage, the distribution of respondent across eight coping styles was carried for all the 24 situations presented in the questionnaire. At the second level, distribution of these eight coping styles was assessed across eight role stressors. Further, this data was also analysed by ascertaining the preponderance of a each coping styles to find out how often a particular coping style has been used by the respondents. This distribution was also analysed across eight role stressors.

Table 5.9: Existing coping strategies as depicted by sample responses

Mode of Coping	Coping Styles for PICS Situation	Situation Number	Existing coping strategies
Avoidance Style	M	7	I am getting resources in time but nothing can be done better.
		6	It is true but I am unable to give more time to my family.
	I	4	I am lonely in the organization as I am shy and do not interact with the others.
		19	I am not ready to take higher responsibility as I do not have sufficient experience in my job.
	E	12	They have taken away some important functions from my role and have given those to other roles because organization is like this. Here no one cares for others.
		23	I do not have the necessary technical knowledge and experience for the job, this is true but my organization always prevents me from going for higher studies.
	D	22	I am busy with my work and do not have enough time for family, that is not true as I give time for family as much as possible.
		21	I do not use my main talents in my role as my experience does not match with work what I am doing.

Approach Style			
M	17	I know I am already overburdened and more assignment are given. then I will work on both assignments.
	16	When time comes. I would like to work on many more functions that are contained presently in my job.
I	14	My family is disappointed and feels deprived of my attention because of my busy job, this is true but I will try to settle with them.
	13	My job will help to use my special training as I am working hard on my job to bring good results to our organization.
E	10	You are not clear what is supposed to do with your job, but I hope to provide you a job description in time.
	9	Many people expect too much from you but I think I must lessen your job burden slightly.
N	8	I shall request my boss to reallocate the functions to me.
	3	I shall take the help of my boss.

5.3.1 Coping styles across 24 Role PICS situations

Data collected from the 262 respondents working in BCCL was arranged in a tabular from to understand the distribution of the styles across twenty four situations.

From table 2.11, it is clear that distribution is maximum for role coping styles 'D' i.e. defensive (D) strategies appeared as dominant mode of coping with stress. It seems that maximum respondents avoid aggression or blame by using various defence mechanism.

Table 5.10: Coping styles across situation

Coping styles:

Situation

→ / ↓	M	I	E	D	m	I	e	n	Total
1	78	0	5	149	0	18	12	0	262
2	52	20	10	83	0	97	0	0	262
3	28	0	15	110	15	68	10	16	262
4	14	0	18	230	0	0	0	0	262
5	5	55	15	34	15	110	15	13	262
6	10	60	9	55	5	94	4	25	262
7	34	5	20	98	0	94	11	0	262
8	19	15	34	125	5	31	33	0	262
9	15	28	0	78	0	120	21	0	262
10	0	31	10	19	16	97	57	32	262
11	55	4	9	39	0	96	44	15	262
12	31	15	20	52	20	107	10	7	262
13	180	4	0	28	0	27	23	0	262
14	34	0	5	159	4	44	16	0	262
15	18	4	0	52	39	83	27	39	262
16	15	0	10	34	10	78	104	11	262
17	44	10	0	20	4	146	26	12	262
18	0	4	55	89	15	28	71	0	262
19	5	4	28	120	4	27	55	19	262
20	15	0	39	123	0	52	25	8	262
21	5	4	39	159	5	28	22	0	262
22	18	4	5	144	17	55	4	15	262
23	5	4	27	94	28	73	31	0	262
24	44	0	34	28	18	26	89	23	262

5.3.2 Coping styles and Role Stress Categories

Distribution of coping styles across eight in stressors has been presented in table 5.12. This analysis also indicates that 89 respondent out of 262 appear using avoidance strategies. 'D' styles to handle various role stressors.

Further, distribution between avoidance and approach styles appear quite even for most role stressors. However, in case of role isolation, self-role distance and inter-role conflict avoidance style is more frequently used by the respondents.

Table 2.11: Distribution Of Coping Styles Used in Role Stress Categories

Coping style \ Stressors	RO	RA	RS	RI	SRD	IRC	RIn	RE	Average
M	47	18	34	20	63	21	20	27	31
I	13	20	3	5	21	22	5	5	12
E	1	26	18	26	18	6	15	26	17
D	83	65	89	133	75	121	82	63	89
M	1	10	7	6	8	11	21	11	9
I	94	73	65	52	55	65	85	45	67
E	15	41	36	12	13	5	21	75	27
N	8	9	10	8	9	11	13	10	10
Total	262	262	262	262	262	262	262	262	262
Avoidance style	144	129	144	184	177	170	122	121	149
Approach Style	118	133	118	78	85	92	140	141	113

Overall avoidance style score has been calculated by addition of all four coping styles depicted by four capital letters M, I, E and D. Similarly, overall approach styles score has been calculated by addition of all four coping styles depicted by four small letters i.e. m, i, e, and n.

5.3.3 Ranking of coping styles across eight stressor

Table 5.1.3: Presents ranking of coping styles across eight role stressors. This table has been derived from table 5.12. Ranks has been assigned on the basis of how frequently a coping styles has been used by respondents for a particular role stressor. If equal number of respondents have been reported using two coping strategies, same ranks were assigned to both the styles.

Table 5.12: Ranks Of Coping Styles in Role Stress Categories

Coping style \ Stressors	RO	RA	RS	RI	SRD	IRC	RIn	RE	Average
M	3	6	4	4	2	4	4	4	3
I	5	5	8	8	4	3	7	8	6
E	7	4	5	3	5	6	5	5	5
D	2	2	1	1	1	1	2	2	1
M	7	7	7	7	8	5	3	6	7
I	1	1	2	2	3	2	1	3	2
E	4	3	3	5	6	7	3	1	4
N	6	8	6	6	7	5	6	7	8

This analysis also indicates that 'D' style is the most used coping style by respondents, by 'i' style which gets second rank.

5.3.4 Findings

Certain things are important which determining how one is coping with stress in a given situations. These includes a change in situation, support system capability and certain unforeseen situation. And more importantly active involvement in fighting with stress gives greater resistance to a person to encounter stress. It is precisely for this reason that approach mode of coping has been termed as functional styles. Avoidance oriented coping styles have a positive and approach oriented styles a negative oriented relationship with role stress had been suggested by **Surti, 1983**.

Nevertheless, a significant number of respondents are at a level from where they may slip into highly stressed categories. It is, therefore, imperative that timely interventions should be initiated. The next chapter i.e. management of stress presents various coping strategies for coal sector executives.

CHAPTER – 6

Management of Stress

Management of Stress

6.1 Summary of Findings

The analysis of Quantitative and Qualitative data as presented in the previous chapter suggests that Coal industry executives are experiencing a fair degree of organizational role stress (ORS). The total organizational role stress scores obtained this study exhibit a similarity with other related studies. The stressors that appear important for Coal industry are Role Erosion, Inter Role Distance and Role Isolation (Table 6.1). A separate analysis was carried out to understand nature of Organizational Role Stress (ORS) among different sub groups. The summary of results for different sub groups based on education, hierarchy, age, place of posting and length of service are as follows:

Educational level and stress

- Employees with lower education background were found to be under greater stress than their more educated counterparts.
- Role Erosion emerged as most powerful stressor for executives not having high educational background. Score on Role Erosion was highest for respondents having less education.
- Role Expectancy Conflict, Role Isolation, Self Role Distance and Resource Inadequacy conveyed as other significant stressors.

Managerial level and stress

- Executives at lower levels, experienced more stress than those at higher managerial levels.
- Among individual stressors, Role Erosion and Role Isolation emerged at significant stressors.

Age and stress

- The study reported an inverse relationship between age and stress.
- Result reported significant differences for total ORS scores for respondents belonging to different age groups.
- Role Stagnation, Personal Inadequacy and Self Role Distance emerged as significant stressor for respondents of different age groups.

Table 6.1 Leading Stressors

Stressors	Mean	SD	Rank	Low Stress		Medium Stress		High Stress	
				N	%	N	%	N	%
RE	6.83	3.00	1	82	31.30	154	58.78	26	9.92
IRD	5.29	3.80	2	138	52.67	98	37.40	26	9.93
RI	4.48	2.78	3	163	62.21	90	34.35	09	3.44
ORS	40.96	21.81	-	14	74.05	68	25.95	00	00

Low Stress : 0-6, Medium Stress : 7-13, High Stress : 14-20

Work place & stress

- Executives posted in under ground mine, reported higher level of stress than executives posted in open cast project mine executives on total ORS scores.
- Stressors like Inter Role Distance, Role Erosion, Personal Inadequacy and Self Role Distance emerged significantly different between these two groups of respondents.

Length of service & stress

- Length of service was found inversely related to overall ORS score.

- Stressors like Personal Inadequacy and Role Ambiguity emerged significantly different for executives having varying length of service.

6.2 Economic effects of stress

The World Health Organisation (WHO) defines health as a state of complete physical, mental and social well-being and not merely the absence of disease. The World Health Organisation (WHO) predicts that by 2020 depression is expected to emerge as the second largest global factor contributing to increase in the number of unproductive years in an individual's life (ET, 2001). Although it is difficult to estimate the actual cost of stress, there are sound reasons to believe that stress is costly. Therefore, it needs to be managed. The finding of this study also indicates the necessity of introducing stress management interventions among coal industry executives.

6.3 Management of stress

There are two levels at which the management of stress is taken-up in any organization. At the individual level the executives try to manage stress personally. This effort on the part of an executive to manage stress at individual level is called coping. The second and, perhaps more important level is the effort of the organization to manage stress among its executives. These organizational efforts are called 'organizational interventions' or 'stress management interventions'. Both coping and organizational interventions are equally important for the successful management of stress in any organizational setting.

6.3.1 Organizational Role Stress and Coping

Stress research data suggests that there is the growing belief regarding coping as the fundamental element in the relationship between stressors and strain (Oakland & Ostell, 1996). Like the concept of stress, coping, too, has been viewed differently by different thinkers. It has been thought of as a psychoanalytic process: as a personal trait, a style, or disposition; as a description of situationally specific strategies; and as a process.

Traditionally, coping was viewed as a stable trait or some enduring behavior or characteristics of the person (Stone et al., 1991). Transactional theory views coping as thoughts and actions that are initiated in response to specific situation. These, however, change over time as attempts are reappraised and outcomes are evaluated. It implies that there is a dynamic interaction between the person and the environment (Dewe & Guest, 1990). The word coping has been used mainly for two purposes - ways of handling stress and the effort to 'master' conditions of harm, threat or challenge.

Every continuum has two opposite extremes. A phenomenon can have both positive as well as negative shades, functional as well as dysfunctional, merit as well as demerit. There are two ways in which an individual can cope with stress. The person may decide not to accept the challenge and may not try to neutralize the stress. This is the passive approach. Alternatively, the person may decide to face the challenge and attempt to tackle the stress. This is the active approach. Pareek (1993) has identified two types of coping strategies to handle stress: dysfunctional and functional. Generally effective coping strategies are 'approach' strategies, which confront the problem of stress as a challenge, and increase the capability of dealing with it. Ineffective strategies are 'escape' or 'avoidance' strategies. Denial of the existence of stress is a common approach to lower stress. These alternative sets of strategies for ten different ORS Stressors have been summarized in table 6.2.

Table 6.2: Coping Strategies for Role Stress : Dysfunctional and Functional

Stressors	Dysfunctional Strategies	Functional Strategies
Inter Role Distance	Role Partition/ Role Elimination	Role Negotiation
Role Stagnation	Role Fixation	Role Transition
Role Expectation Conflict	Role Taking	Role Making
Role Erosion	Role Visibility	Role Development/ Role Enrichment
Role Overload	Role Reduction	Role Slimming
Personal Inadequacy	Role Shrinkage	Role Linkage
Role Isolation	Role Boundness	Role Linkage
Self Role Distance	Role Rejection/Self Rejection	Role Integration
Role Ambiguity	Role Prescription	Role Clarification
Resource Inadequacy	Role Atrophy	Resource Generation

Source: Pareek, 1993

Kaur and Murthy (1986) have studied the coping strategies of the managerial personnel at different organizational levels in public sector organizations. The findings indicate a significant difference in coping strategies adopted by individuals working at junior level and avoidance strategies were usually predominant at junior level while approach strategies were predominant at the senior level.

6.3.1.1 Inter Role Distance and Coping

Inter role distance (IRD) is a result of demands between organizational and non-organizational roles. It has emerged as a second most potent source of stress for coal industry executives with a mean score of 5.29.

A desirable approach to the problem may be role negotiation. Role negotiation is the process of establishing the mutuality among roles and getting necessary help to handle work and non work role more effectively. In other words, this is a way to alter other people's expectations of a particular role. For example, a wife may renegotiate with

husband the expectation that she should be responsible for all domestic work or vice versa. Similarly an executive may also negotiate with his/her seniors regarding family problems. Sometimes holding discussions with peers and subordinates can help a lot in this matter. Functional approach strategies include delegation and refusing to take extra work.

Another approach is by altering self-expectations and behaviors without changing other people's attitudes. This may involve taking a personal decision to limit activities in the career, spousal, parental, and societal roles etc. These dysfunctional strategies include eliminating roles like restricting societal and religious duties. The dysfunctional approach of handling inter role distance may either be role partition or role elimination. Some individuals ignore family duties for career growth. They work hard to get promotion for a bright future. They feel that by reaching higher position they would manage and cope familial responsibilities in a better way. Jobs in coal industry are transferable. Some executives leave their family in their home towns to avoid conflict between day to day family needs and work place duties. Role elimination at workplace may help in coping inter role distance but it might increase the other role stressor viz. role erosion. Hence, the consideration of priority and importance of role is necessary at the time of role elimination.

6.3.1.2 Role Stagnation and Coping

The feeling of being stuck up in the same place or same over a long time is role stagnation. Some times, an executive gets promotion but nature of job remains same. It results in a perception that there is no opportunity for career advancement.

Role stagnation has emerged as a less significant contributor to overall organizational stress with a mean score of 3.62. However, respondents in different age groups reported significant difference on role stagnation. This stressor is more pronounced among respondents in lower age group. Coal industry has a wide hierarchical base with narrow top. The promotional avenues are limited. Executives work for longer

periods at same positions. They, therefore, end up with a feeling of Role stagnation.

Time bound promotion, best on fixed quota for disciplines/functional areas might have lead to a negative feeling among executives There may be little incentive for learning new skills. In such a situation when a person gets promotion based on seniority, he may not be able to shoulder changed responsibilities of the new role. In such a situation, he may continue to play the previous role about which he is sure, and which he has been performing successfully. This is an avoidance strategy named as role fixation. Role transition is a functional approach to handle this stressor. This strategy requires acquiring new skills to prepare one self to assume new responsibilities. The success of this strategy depends on organization's human resource utilization approach. The organization needs to have a comprehensive Training & Development strategy to help executives shoulder newer responsibilities.

6.3.1.3 Role Expectation Conflict and Coping

A person cannot please everyone while performing the role. This is the basis of role expectation conflict. Role Expectation Conflict surfaces when expectations or demands by the different role senders are at variance. One way to handle role expectation conflict is to eliminate those expectations from the role that may be in conflict with others' expectations. This is the process of role shrinkage. It is an act of pruning the role in such a way that some expectations are given up. Role shrinkage may help to avoid the problem. However, it is a dysfunctional approach as it restricts the performance of a larger role and has its own obvious disadvantages.

The approach strategy of handling this conflict is establishing linkages with other roles. Introducing new ways of negotiating conflicting expectations may solve the problem. When organization facilitates the resolution of conflict then the role occupant may feel higher satisfaction and overall growth .This study has found role expectation conflict as a remote contributor to stress in coal industry executives with mean value 3.24. Thus, it does not emerge as a problem area for this occupational group.

6.3.1.4 Role Erosion and Coping

Role erosion (RE) is a feeling of responsibility without power. The steady growth of information technology has affected every aspect of human life. In organizational context, it has lowered the need for raw materials, labour, time, office space, capital and knowledge. It has become the key resource of advanced economy. The importance of conventional wisdom of public sector executives has been reduced due to automation in the industry. Executive are often having limited role to play in effective performance of the job. Many jobs have become redundant or less important . This is one of the key reason for Role Erosion in the coal industry.

Role Erosion has emerged as the most potent stressor for coal industry executives with high mean value 6.83. In role erosion, an individual feels that some important functions which he/she would like to perform are being shared or taken away by some other roles. The normal reaction in such a situation is to fight for the rights of the role and to insist on the clarification of roles. This issue can be tackled by making structural clarifications of various jobs. An approach strategy may be to enrich the role. This can be done by analysing the role systematically and helping the individuals see the various strengths and challenges in the role that might, not have been perceived earlier. Important members of the role set can also help make the role more challenging and satisfying to the role occupant.

An example of approach strategy could be introduction of departmental examination for every promotion. The executives for promotion can be identified in advance. These executives can be given proper training so that they can assume new roles and perform effectively after providing requisite training. It must be ensured that they have acquired some minimum standard to take up the new role. Executives should be promoted only after undergoing these exams. This can help both organization and executives regarding much-observed problems like bias in promotion.

Further, to solve the problem of Role Erosion, the organizations can also regularly undertake the exercise of job redesign so that the new demands put on executives are properly articulated in the job description from time to time. This may help in reducing the problem of Role Erosion.

6.3.1.5 Role Overload and Coping

Role overload is a feeling of too much or too difficult work expectations from different sources. Role overload does not emerge as a major stressor as the mean score is 2.90 only. It is important to tackle overload problems before they escalate. People with too much work to do are more likely to make mistakes or miss deadlines. Problem of work overload can be solved with good assertive and delegation skills. When an individual is feeling work overload, he needs to prioritize. He may give preference to important functions. Delegating some functions of a job to others on role sharing or role transfer basis may also be helpful. This is called role slimming which is an approach strategy.

During last one decade, several factors have contributed to changing profile of jobs in Coal Industry. Factors such as liberalization, application of the essential services. growing demands of coal sector and increase in population etc. are contributing to changing profile of jobs in Coal Industry. Newer roles are being added to existing roles. However, the person may prefer to perform such functions that he may do without additional effort. Functions that are new and emerging may remain at lower level of priority and thus be neglected. In this sense, this strategy is dysfunctional. This is an avoidance strategy. Training for newer roles may help and give direction to ensure that individual might perform effectively in the changed context.

6.3.1.6 Role Isolation and Coping

Role isolation has emerged as third most potent stressor for coal industry's executives with mean score 4.48. Role isolation is characterized by tension and distance between two roles in an organization. Lack of cooperation between two roles is the central

theme in role isolation stressor.

Significant differences have been found on role isolation stress among respondents across hierarchical levels and varying educational backgrounds. The feeling of Role Isolation arises when a person at junior level or in the lower age group seeks help and support from superiors and does not get proper co-operation.

Role Isolation often results because of poor interpersonal relationships which result in lack of communication and proper coordination among executives in the organization. This induce a feeling of Role Isolation. To overcome this stressor, it would be desirable for organizations to redesign jobs in a manner that they don't compete with each other. Jobs should supplement each other and result in win-win situations. This would help in greater cooperation and coordination among executives and thus reduce role isolation.

This situation affects the organization adversely in terms of productivity and overall effectiveness. The role occupant may negotiate this by performing his/her role efficiently but avoiding interaction with other higher placed counterparts. The role occupant, thus, confines himself to his/her own role. This can be called role boundedness. It is a dysfunctional strategy of coping with role isolation and does not help the individual play his role in the larger interest of the organization.

A functional approach strategy for handling role isolation stressor is role linkages. Johari window model can be helpful in reducing role isolation stress. It helps executives to grasp situation, people and organization better. Sharing the experiences on regular basis with different hierarchical groups can make a significant impact on the organization. This practice is also helpful in increasing group cohesiveness and building team spirit.

6.3.1.7 Personal Inadequacy and Coping

Personal inadequacy also emerges as a problem area among coal industry's executives with mean score (4.46). Personal inadequacy is not to be equated with personal weakness. This only shows that there is a greater possibility for improving

one's potential. Organization must take this problem area as an opportunity for organizational growth. The perceived feeling of lack of competencies for effective job performance is called personal inadequacy. The role shrinkage is a quick solution to personal inadequacy stress i.e. individual may perform only such roles he/she is capable of performing. This is an avoidance strategy.

To overcome this problem it is suggested that the executive are assigned particular area of work at the time of induction. The executives who are given a particular area of work should be trained in that particular area and allowed to develop their expertise in their own field. Also, fast track promotion schemes would help potential executives to secure their career growth in early stages of life. This can inspire executives to divert their energies to acquire skills needed for higher position. Behavioural and technical training and proactive learning environment across hierarchical levels (role linkages) might be helpful in coping with this stressor positively.

6.3.1.8. Self role distance and coping

SRD stress occurs when the present role goes against the one's self-concept and there is mismatch between the person and his job. This is an usually sighted problem in business organization. There are two logical outcomes of self-role distance. First, the role occupants may lose interest in their roles. Second they may overlook their self interest. Both the conditions are harmful for organization as well as individuals. Both this conditions are avoidance approaches.

Self-role distance has not been found dominant stressor in data analysis. For underground mine executives, it has emerged as a potent stressor. Large and different types of work require different skills and considerable experience. So, the work specific mines for underground mines may provide some comfort to reduce this stressor among experienced executives. Self-role distance has also been found significant among respondents from different educational background. An approach strategy to solve this problem is flexibility in work schedule or tie up with professional education institute

for those who are pursuing or interested to joint professional courses.

6.3.1.9 Role ambiguity and coping

Role ambiguity is the least contributor to overall ORS stress with mean score of 2.34 only. When role related information is unclear, it may lead to role ambiguity. The score on role ambiguity has been found relatively higher for executives in the younger group age (3.31). Conventionally, organizations may be lax in revising outdated written job descriptions. So this may create a sense of ambiguity and confusion among new executives.

The dysfunctional coping strategies may involve two options. First is the role prescription in which various expectations are defined clearly. Second, the individual may remove ambiguity by fitting into the role as described by other's expectation. This process is called role taking. Both are avoidance strategies.

An approach strategy may be to seek clarification from various sources and to define the role in the light of such clarifications. A more creative option is to define the role according to one's own strengths and take steps in making the role more challenging. This is the process of role making. Role related informations should be available for the executives by effective use of two way management information system and job description. However, as this has emerged as less potent problem, efforts may be initiated to handle Role Ambiguity at the initial stage of induction of new executives. Otherwise, it appears that executives have sufficient clarity on job demands.

6.3.1.10 Resource Inadequacy and Coping

This is due to a perceived feeling of lack of resources required for effective performance such as information, people, material, finance, facilities etc. Resource Inadequacy stressor has emerged as a moderater potent stressor for coal industry executives with mean score of 2.65.

Each occupation has its own unique environmental factors that contribute to stress.

For example, a job that requires meticulous writing work, poor lighting or extremely bright lighting can create eyestrain. The design or physical setting of workplace may be another source of stress. If an office is poorly designed, with relevant personnel spread across different locations, it can create difficulties in communication. This is important because many workplace stressors are rooted in poor communication process (King & King, 1990; Schaubroeck et al., 1993). This result in poor functional relationships. In addition to above, resources like spare parts of machines, well equipped work shop, safety items, sufficient imprest money and skilled technical workmen are equally important and required. This will improve productivity of executives.

6.3.2 Organisational interventions

In the previous section alternate approaches of coping with different stressors has been discussed. But organizations, too, need to initiate measures to tackle executive stress. The various measures that are taken at organizational level are called as 'organizational interventions.

6.3.2.1 Steps for stress management interventions

Following steps for stress management interventions have been proposed. Recognisation of existing causes of stress and then identification of symptoms of stress should be exercised by the organization. This will help organization to introduce SMI for specific stressors and its evaluation.

a) Recognizing stress as an organizational problem .

b) Monitoring stress signs and identifying potent stressors

c) Initiating stress management interventions (SMI) targeting specific stressors.

d) Regular evaluation, improvement and change in interventions based on continuous feedback.

6.3.2.1 a Problem Recognition

Executives need to know that the organization benefits from a stress free workplace

environment organizations may wish to initiate steps to arrest stress in every conceivable manner. The main step in management of organizational role stress is recognizing stress as an organisational problem and not merely an individual's problem. This calls for a paradigm shift, in which facilities and programme aimed at reducing stress in the workplace are considered an investment, and not an expense.

The organization may not initiate action on this account because of many reasons, e.g. (a) manager's perceptions and beliefs about the impact of the work environment on levels of employee strain and well being (Cartwright, Cooper, & Murphy, 1995), (b) managers belief about who is responsible for managing individual employees' levels of strain (Cooper, Dewe, & O' Driscoll, 2001), (C) the costs associated with making organization level changes compared with those related to teaching individuals to cope more effectively (Cooper & Cartwright, 1994; Daniels, 1996; Murphy, 1988).

6.3.2.1.b Monitoring

An organization must monitor the sign and signals of stress on a regular basis. There are four indications that may provide a cue that employees in the organization are suffering from stress (Edworthy, 2000).

- **Performance** A distinct decline in output or productivity with no clear reason ; increase in error rates with excessive wastage; workflow and planning deterioration, deadlines are not met, poor standard of decision making.
- **Employee Morale** Motivation of executive decreases and commitment to organization declines; an increase in time at work does not lead to improved results; internal sabotage may occur.
- **Relationship** A team spirit is difficult to maintain; tension between colleagues increase and decisions become harder to reach; industrial relations deteriorate.

- **Sickness, Absenteeism** Incidence of vague illness increase; breaks from work increases; late arrivals and early departures become more frequent.

The appropriate method to understand source, of stress in an organization depends on organization size and available resources. For small organisation group discussions among managers, labour representative and employees can provide rich source of information. In larger organizations, such discussions can help design formal surveys for gathering input about location, nature, and impact of stress and employees perceptions. This is often carried out through a stress audit.

The stress audit exercise helps in finding problem areas and possible intervention strategy. The data required for stress audit can be collected through questionnaires, clinical diagnostic interviews and physical examination (Pestonjee, 1987).

The next stage of monitoring involves targeting source of stress for change with proposing intervention strategies for stress isolation.

6.3.2.1.c Introducing Stress Management Interventions (SMI)

When it is established that an organization is suffering from organizational role stress and is incurring substantial amount of visible (performance) and invisible (employee health) loss, top management ought to introduce stress management interventions on priority basis. Three major steps are involved in introducing stress management intervention program are :

- **Prestress interventions**

Most stress management programs are directed toward responding to problems as they arise, with little emphasis on preventing potential problems. Prestress / Primary / Preventive interventions are based on the assumption that the most effective way to combat stress is to eliminate or at least reduce the sources of stress in the work environment.

The basic philosophy is "prevention is better than cure". This type of intervention is the most proactive and preventative approach to stress management. Careful assessment of specific stressors is the key to preventive interventions. It has been reported as generally being effective when implemented systematically (Burke, 1993; Ivancevich & Matteson, 1987; Murphy, 1988).

The main focus of these interventions is on modifying or adapting the physical or socio-political environment to meet the needs of workers. This chiefly includes structural changes in the organization, job redesign, and changes in social systems within the organization.

However, before introducing an intervention, employees should be informed about actions that will be taken and their time frame. This reduces resistance from employees to structural / physical changes. It is also true that different problems require different strategies. Some problems require organization-wide interventions with greater investment of time and money. Other problems like excessive workload may exist only in some departments and thus may necessitate specific solutions such as job redesign or introducing a flexible work schedule in that particular department. However, a specific top management commitment is essential for primary interventions. There must be fair and unbiased grievance procedures to give employees an opportunity to vent their frustrations through established channels. It is also necessary that promotion, salary, and other rewards are dispensed on the basis of merit rather than favouritism or political pressure, (Elliott & Jarrett, 1994)

In coal industry, executive may be informed in advance about structural changes in the organization like job redesign and organizational culture by the top management. Further, a team of senior executives carefully can assess

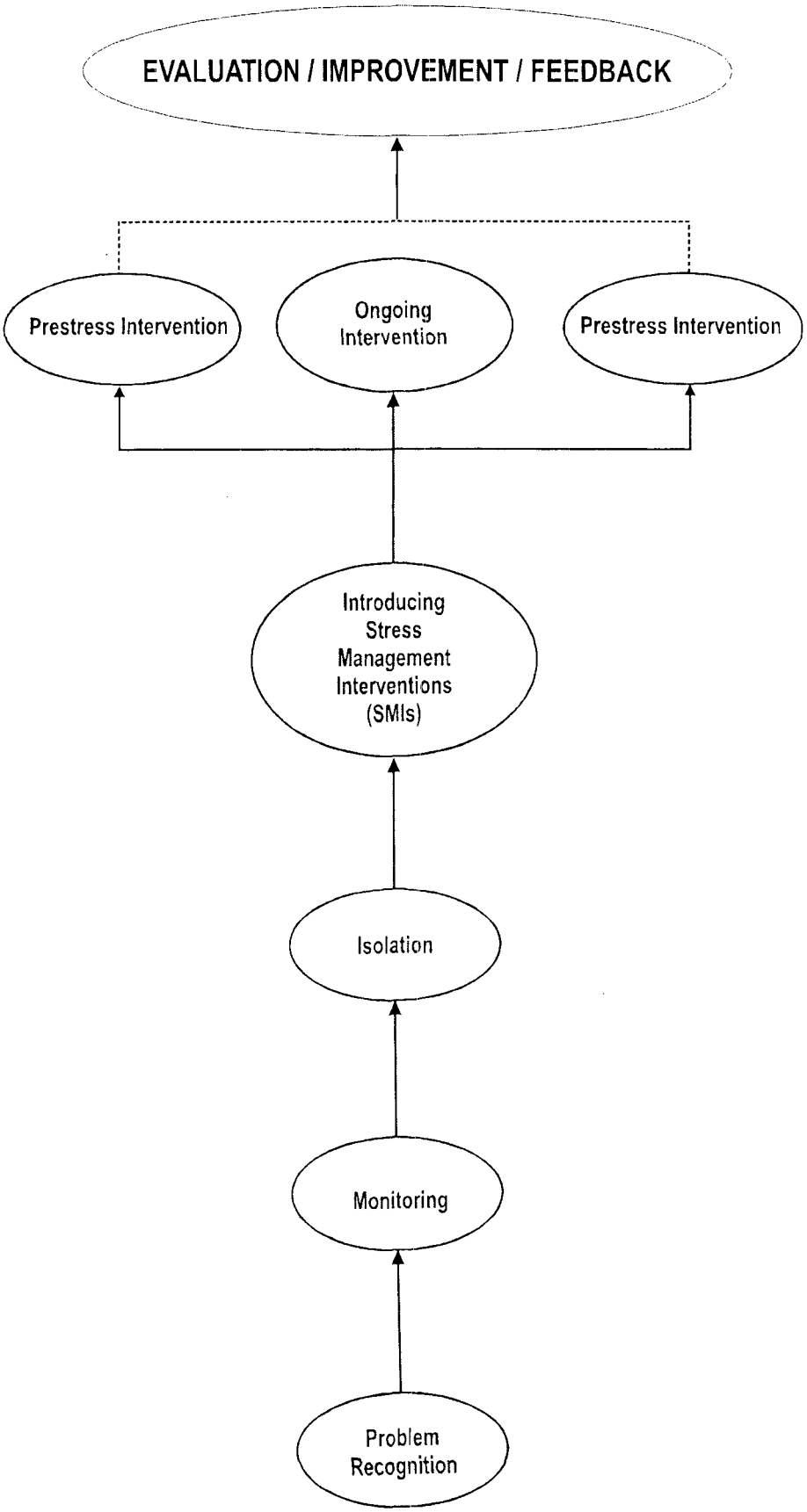
specific stressors systematically. Floor level executives posted in both underground mines U/G and open cast project OCP follows above information regularly which may help organisation in stress management intervention.

- **Ongoing Stress Interventions**

The majority of workplace intervention programs are designed to deal with employees' on going stress related problems. Most such programs are in organizationally sponsored stress management and health promotion initiatives. Ideally, these programs are also thought to stem from the belief that an organization should take some responsibility for the welfare of its workers, who are their most valuable resource (Gebhardt & Crump, 1990). The ongoing stress intervention is also called as secondary interventions or 'moderating interventions'. The scope can be both preventive and/or reactive. The aim is to modify/moderate individual response to stressors. The main theme of this intervention is to enhance stress tolerance limit. The underlying philosophy is that one should be able to understand and cope with stress. Organizations can use various training programs like sharing stress related information, stresses training, spouse involvement programs (SIP) or employee wellness programs to reduce or eliminate individual stressor, and other secondary interventions are not very costly. They are easy to implement. Most of the organizations take ongoing stress management programs or secondary interventions as a band-aid approach by assuming that stress is an inevitable fact of the work situation to which employees must adapt rather that attempting to change stress (Cooper & Cartwright. 1994).

Inter Role Distance has emerged as potent stressor in the study also. Spouse involvement program is an instrument for organization to reduce work-family conflicts. If spouse is involved, he/she can better appreciate

Figure 6.1. Organization's effort to stress management



job difficulties and challenges and the executives get better home atmosphere. Social support is known to have moderating impact on stress by increasing resistance to stress (Cobb, 1976). Studies show that problem-solving seminars could be useful in reducing work-family conflict. Culbert & Crenshaw (1972) worked with employees whose job of field-testing imposed a heavy travel schedule, resulting in disconnected family and social relationships. The seminars concentrated on galvanizing the analytical and problem-solving skills of husband and wife. Participants felt better equipped to cope with work-family conflict. High levels of social support can reduce levels of psychological, physical and behavioural strain. Even if stressors persist, the existence of support provides some comfort. It has also been proposed that social support "buffers" the effects of stressors. Jex (1998).

In the present situation of coal industry many stress intervention programmes may initiated by top management. Infact, preventive as well as curative interventions have been planned. Introduction of various training programme, stress related information, spouse involvement programs, health check-up program and various welfare measures have helped management in stress management intervention.

- **Poststress: Dealing with the effects of Workplace Stress**

This is tertiary level stress management intervention program. Here assistance is provided to stressed executives to help/cure the symptoms of stress. Intervention at this level are based on a treatment rather than prevention. Stress prone executive are main target at this level. The prime concern is to minimize the damaging consequences of stressors by helping individuals cope more effectively. Organization can use employee assistance program (EAP) and counseling to cope with stress prone employees.

Approach towards handling this problem differs from organization to organization. Some organization take full responsibility of their employee while other organizations do not show interest in problem executives.

In coal industry, tertiary level stress management intervention like stress release program, yoga and mediation and other physical therapy are being conceived and implemented gradually and steadely.

This group of intervention, might have three components Psychological, Physical and Nutritional.

- **Psychological** Psychological intervention is the most important and urgent part for organization and individuals as well. The actual treatment of psychologically ill people would be a better way in coping with affected employees. Treatment consists of counseling, transcendental meditation, biofeedback, autogenic training and various therapies.

  Direct organizational support helps other employees too. Some companies make vacations mandatory for their employees. Employees are encouraged to avail vacations. This helps them to relax and regenerate and thus return to work with greater enthusiasm and effectiveness.

- **Physical :** Here, health through yoga or exercises is explained. Yoga is a complete system of physical, mental, social, and spiritual development of human being. Now a day's people realize that there is no short cut for enjoying better health except reorganizing their lifestyle by way of dealing with distress, sedentary behaviour and improper dietary habits. A host of yoga techniques consisting of some important asanas and pranayama are effective in meeting the requirement of psychosomatic balance.

- **Nutritional** The important balanced diet has been known for long. It places significant role in healthy living, helps combat daily stress and also reduces

undue stress (Romas & Sharma, 1995). Though the relationship between diet and stress has not been studied extensively (Greenberg, 1993), the importance of eating balanced diet to maintain health and reduce stress cannot be ruled out (Girdano, Every & Dusek, 1993), Eating health diet enhances our coping abilities against various stressors and stressful events. When our meals consist of all the ingredients of balanced diet, then our body gets sufficient energy for coping with stress. A balanced diet also provides enough reserves to manage stress. Therefore, the key lies in maintaining balance with quantity and quality of food and regularity in eating.

6.3.2.1 d Evaluation, Improvement and Feedback

Evaluation is an important aspect of any business process. Evaluation is necessary to determine whether the intervention is producing desired effects and whether change in direction are needed. The employee assistance program (EAP) as a stress management intervention tool is also required to be evaluated. Often an intervention is effective in one organization but not in another. The same applies to time and group also. There is need for constant monitoring and a periodical evaluation. Evaluation should be based on expert group advice and executives feedback.

Thus, we find that for effective executives stress management a holistic approach involving the executives, the organization and the person environment dynamics needs to be taken. Piece meal efforts are not of much help.

6.3.3. A Summary: Stress-Management Intervention (SMI) for Indian Coal Industry:

This section includes discussion on Stress Management Intervention in context of CIL, specifically BCCL. In this all dominant Organizational Role Stress (ORS) stressors and some special type of stressors and coping strategies along with stress management intervention have been proposed.

A summary of such discussion for the specific group of executives of coal industry is presented in table 6.3.

Table: 6.3: A summary: Stress Management Intervention (SMI) for Indian Coal Industry.

Type of Analysis	Significant Stressors	Proposed strategies
Overall ORS Analysis	RE	Job rotation and job redesign.
	IRD	Spouse Involvement Programme, Get together Picnic and Club Facility.
	RI	Linkage with other role, Participative management.
Education Profile	RE	Introduction of career growth linked education.
	REC	Training Programme for less qualified executives.
	RI	Co-ordination among executives in a team.
	SRD	Right executive at right place (Work).
	RIn	Ensure availability of resources to every executives
Hierarchy Type	RE	Review of Promotion and Posting Policy.
	RI	Team building efforts may increase mutual co-ordination.
Age Profile	RS	Review of promotion and transfer policy at regular interval
	PI	Recruitment of young executives and training of existing executives.
	SRD	Training of existing executives to perform various types of role.
Underground Mines (U/G) and Open Cast Project mines (OCP)	IRD	Spouse involvement programme, Get together picnic and Club Facility
	RE	Rearrange important roles
	PI	Systimatic tracing and developement efforts
	SRD	Counselling especially for executives in underground mines.
Length of Service	PI	Career Growth will inspire executives to acquire skills for higher position.
	RA	Induction training for executives for proper role clarity in both U/G and OCP mines.

There is a need to develop a broad consensus on the nature of stress in Coal Industry. This shall be the foundation for individual and organisational efforts to manage it. It requires an official recognition of work place Stress and illness from organization, society and government. It can be tackled through the application of health and safety legislation. Government need to recognize stress prone jobs and make it mandatory to provide for an effective prevention system. Apart from different industrial and labour laws, there is a need of a separate commission and laws for governing the stress related issues separately. Without such legal machinery, the interventions on stress would remain unenforceable. Since last 20 years Indian business organizations have been witnessing the socio-cultural charges. There is a growing demand of specialized professional like "Industrial Sociologist" as well as Industrial "Psychologist" in every business settings. Former can articulate the idea and later can implement.

A fair amount of calculated risk taking should also be encouraged. The solutions that had worked in yester years are not considered quite appropriate today and will in all likelihood become irrelevant tomorrow. The researcher concludes this study by emphasizing that stress is inevitable but what is not inevitable is prolonged, recurrent or intense distress. "Check and Control" practices at certain intervals would be beneficial for valuing the stress in terms of duration and usefulness to an organization and individuals both.

Summary and Conclusion

Stress is one the key medical and social problems of the society. The problem is especially relevant to modern executives with fast and irregular life-style. And he is person who holds the key to organizational effectiveness. Therefore, researchers in management and organisation behaviour have started taking executive stress seriously. This has prompted us to undertake the present work and study impact of occupational role stress experienced by executives, and their coping styles in the context of Indian Coal Industry.

7.1 Key Highlights

The Indian coal industry is unique in nature as its operative conditions, working environment and hazardous production systems, all call for continuous vigil. Given the strategic nature of the Industry the Government, the media and the public keep a continuous watch on its functioning. Thus executives here have to exercise extra caution in performing their duties. The Industry is a good subject for stress research.

In the ambit of present research we have included the public sector giant Bharat Coking Coal Limited, a subsidiary of Coal India Limited. The reason for choosing Bharat Coking Coal Limited was its strategic importance as the producer of prime Coking Coal and the researcher's familiarity with it.

Occupational role stress has been measured using ORS developed by U. Pareek to classify executives in High, Moderate and Low stress groups. The difference in the nature of stress were also analysed in terms of various variables like, age, length of service, hierarchy, type of place of work etc.

The Role PICs, again, designed by U. Pareek has been used to ascertain the styles of coping adopted by executives. The study has been conducted on a sample of 262 executives of Bharat Coking Coal Limited posted in twelve different locations.

Each respondents has been contact on a one to one basis. The responses have been grouped as per the suggestions given by the authors of the scales.

The data thus organised has been analysed in terms of distribution of various coping styles for PICS situations, distribution of coping styles used in Role Stress categories and ranks of coping styles in role stress categories.

The study establishes that Indian Coal Industry executives are experiencing Organisational Role Stress (ORS). The mean score for total ORS is 40.96. This is moderate stress level and needs to be controlled before it becomes high. Our findings, thus, indicate that occupational role stress can have serious implications for executives and organisations, and the organisations must be more concerned about their executives' help.

Another highlight of the study is that Role Erosion (RE) has emerged as the most potent stressor with a mean score of 6.83. The Standard Deviation (SD) on this count is 3.00. This indicates that the problem is not confined to some groups or individuals but is rather widespread.

It is important to mention that underground mine (U/G) executives (43.10) have reported higher level of stress than open cast mine executives (40.13) on total ORS scores. High SD value of total ORS for underground mines executives indicates that the problem of role stress has to be tackled for this group of executives.

7.2 Conclusion

In the light of these major findings it can be concluded that coal industry are vulnerable to stress and some intervention is needed to help executives to cope with it.

Stress of the executives depends on the style of coping they adopt and generally the approach coping style, in which the executive decides to face the situation and make active effort, helps handle stress level. Those who tend to avoid stress, infact fail to avoid it, and become a victim of stress. The avoidance style users gradually get into

higher stress group. Organisations must identify executives and offer them required training and education them to help cope with occupational role stress better.

The major conclusion is that organisations need to emphasize managing stress on a more greater scale as in stress management individual specific factors have important bearing in aggravating its ill-effects. Thus the organisation should show concern for their executives in both on and off the job matters. This concern may go a long way in making the executive effective and by extension, the organisaion more effective. As no managerial system is perfect, stress will ever remain. The best course is to cope with it, head-on. And it can be achieved, with some effort, some training. Further, growing competition and demand of coal may lead to more challenges for executives in future and stress management intervention may be a timely step.

Why we are emphasizing this is because there is ample scientific evidence to suggest that stress is a major cause of disease for mind and the body, the body through the mind and, the organization through the mind and the body of the executive. The relationship between stress and health, and health and performance is, beyond doubt, inverse.

Though the field of stress research still lacks an integrative framework which can explain the phenomenon and the majority of research results in a logical and theoretical manner. The realisation has dawned stress that whether at work or elsewhere, is not an exogenous entity. Therefore, the individual executive should remain at center-stage of any effort at stress management.

Effectiveness of organisations will automatically increase if executives are made effective. And effective executives are made, not born. Problems like occupational role stress should not be allowed to hamper executive effectiveness.

The present research is only a beginning. More researches are needed that study the variables under report and their inter-relationships before anything conclusive can be said.

However, in the course of this study we have also reviewed related researches in the area and our conclusions are largely in conformity with most of the findings. Occupational role stress depends on coping styles of the executives and we must help executives to acquire functional coping styles

7.3 Future direction

Indian coal industry is in a state of change. This study has been carried out after 18 years of the opening up of coal industry for the private sector. It may be pertinent to reassess the intensity of stress during the phase of emergence of private sector participation in coal industry. This shall help future researchers to compare and understand this phenomenon at the different stages of privatization of coal industry. In future, executives may face even more job stress due to intensity of competition. Coal industry has been liberalized for more than 12 years. Further, researcher on coal industry may be carried out on both sectors i.e. Public and private sectors. This may provide a comparative understanding of work stress in private vis-à-vis public sector of the coal industry.

This study reports that, executives deployed in underground mine (U/G) are working with higher level of risk. There are prone to roof fall, poisonous gas emission, water inundation and mine explosion etc. where as open cast project mine (OCP) executives are working on surface with problem of temperature, humidity, rain, smoke and dust etc. The study reports that underground mine (U/G) executives are experiencing greater role stress than open cost project mine (OCP) executives. There is need to study stress in underground mines (U/G) of other subsidiary companies of coal India Limited as well as private sector underground mines (U/C). This will give a comparative understanding of stress in both public sector underground mines and Private Sector underground mines. Such studies shall help in deepening our understanding the nature of stress in underground mines. This shall then become the sound basis for initiating remedial measures.

This research also hints at helping executive acquire functional coping strategies. There is a need to design such executive development programme linking these with career progression to help executives acquire functional/approach coping styles.

Amount of stress is varied for individuals as well organizations. In order to enrich our understanding, researcher may generate qualitative date for research study. Scores of variables cause work stress. Researchers may generate qualitative data that shall help to understand specific causes of job stress. In this context, there is need to concentrate on executives who are in high stress category.

Understanding the causes of a problem is one aspect and another aspect, perhaps most important, is the management of stress. Management of stress is not that well researched area. A number of researchers are working in this field in western countries and there is need to unearth relevant approaches for handling this problem in different geographical/occupational settings. Studies on management of stress in different organizational settings in the same industry as well as across the industry are the need of the hour.

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ORS Scale

Please do not write anything on these pages. Responses should be given on a separate answer sheet provided to you.

People have different feelings about their rules. Statements describing some such feelings are given below. Use the answer sheet to write your responses. Read each statement and Indicate, in the space against the corresponding number in the answer sheet, how often you have the feeling expressed in the statement in relation to your role in your organisation. Use the numbers given below to indicate your own feelings.

If you find that the category to be used in answering does not adequately indicate your own feelings, use the one which is closest to the way you feel. Do not leave any item unanswered. Answer the items in the order given below.

Write	*0*	*if you never or rarely feel this way*
"	*1*	*if you occasionally (a few times) feel this way*
"	*2*	*if you sometimes feel this way*
"	*3*	*if you frequently feel this way*
"	*4*	*if you very frequently or always feel this way.*

ORS Scale

1. My role tends to interfere with my family life.
2. I am afraid I am not learning enough in my present role for taking up higher responsibility.
3. I am not able to satisfy the conflicting demands of various people above me.
4. My role has recently been reduced in importance.
5. My workload is too heavy.
6. Other role occupants do not give enough attention and time to my role.
7. I do not have adequate knowledge to handle the responsibilities in my role.
8. I have to do things, in my role, that are against my better judgment.
9. I am not clear on the scope and responsibilities of my role (job).
10. I do not get the information needed to carry out responsibilities assigned to me.
11. I have various other interests (social, religious, etc.) which remain neglected because I do not get time to attend to these.
12. I am too preoccupied with my present role responsibility to be able to prepare for taking higher responsibilities.
13. I am not able to satisfy the conflicting demands of the various peer level people and my juniors.
14. Many functions of what should be a part of my role have been assigned to some other role.
15. The amount of work I have to do interferes with the quality I want to maintain.
16. There is not enough interaction between my role and other roles.

17. I wish I had more skills to handle the responsibilities of my role.

18. I am not able to use my training and expertise in my role.

19. I do not know what the people I work with expect of me.

20. I do not get enough resource to be effective in my role.

21. My role does not allow me to have enough time with my family.

22. I do not have time and opportunities to prepare myself for the future challenges of my role.

23. I am not able to satisfy the demands of clients and others, since these are conflicting with one another.

24. I would like to take on more responsibility than I am handling at present.

25. I have been given too much responsibility.

26. I wish there was more consultation between my role and other roles.

27. I have not had pertinent training for my role.

28. The work I do in the organisation is not related to my interests.

29. Several aspects of my role are vague and unclear.

30. I do not have enough people to work with me in my role.

31. My organisational responsibilities interfere with my extra organisational roles.

32. There is very little scope for personal growth in my role.

33. The expectations of my seniors conflict with those of my juniors.

34. I can do much more than what I have been assigned.

35. There is a need to reduce some parts of my role.

36. There is no evidence of involvement of several roles (including my role) in joint problem solving or collaboration in planning action.

37. I wish I had prepared myself well for my role.

38. If I had full freedom to define my role, I would be doing some things differently from what I do now.

39. My role has not been defined clearly and in detail.

40. I am rather worried that I lack the necessary facilities needed in my role.

41. My family and friends complain that I do not spend time with them due to the heavy demands of my work role.

42. I feel stagnant in my role.

43. I am bothered with the contradictory expectations different people have from my role.

44. I wish I had been given more challenging tasks to do.

45. I feel overburdened in my role.

46. Even when I take the initiative for discussions or help, there is not much response from the other roles.

47. I need more training and preparation to be effective in my work role.

48. I experience a conflict between my values and what I have to do in my role.

49. I am not clear as to what are the priorities in my role.

50. I wish I had more financial resources for the work assigned to me.

Appendix 1.1

Answer Sheet for ORS Scale

Read instructions carefully before responding on this sheet

NAME SEX AGE DATE

ROLE ORGANISATION

1	-	11	-	21	-	31	-	41	-	...	...	IRD	1
2	-	12	-	22	-	32	-	42	-	...	...	RS	2
3	-	13	-	23	-	33	-	43	-	....	...	REC	3
4	-	14	-	24	-	34	-	44	-	...	...	RE	4
5	-	15	-	25	-	35	-	45	-	...	...	RO	5
6	-	16	-	26	-	36	-	46	-	..	..	RI	6
7	-	17	-	27	-	37	-	47	-	..	..	PI	7
8	-	18	-	28	-	38	-	48	-	...	...	SRD	8
9	-	19	-	29	-	39	-	49	-	...	...	RA	9
10	-	20	-	30	-	40	-	50	-	...	..	Rin	10

Role PICS

NAME

AGE

ORGANISATION

POSITION

INSTRUCTIONS

The Purpose of this instrument is to find how different persons perceive different situations involving organisational roles. In this booklet twenty-four situations are shown . In each situation, two persons are talking. The statement made by one person is printed and the space for the statement made by the other person is vacant. Imagine what the other persons would have said, and write this down in the blank space.

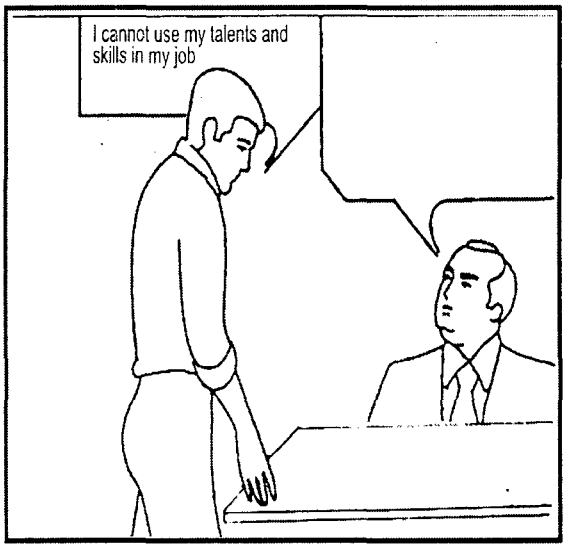
There are no right or wrong answers. Please write down your first reactions. Do not leave any situation unanswered, and go to the next situation after you have responded to the previous one.


So they load you with so much more work !


It's too much that my boss and my subordinate have just opposite expectations from me.


It's pity you did not have an opportunity to prepare for the future role you are likely to take in the organization


You are so lonely in the organization!


I cannot use my talents and skills in my job

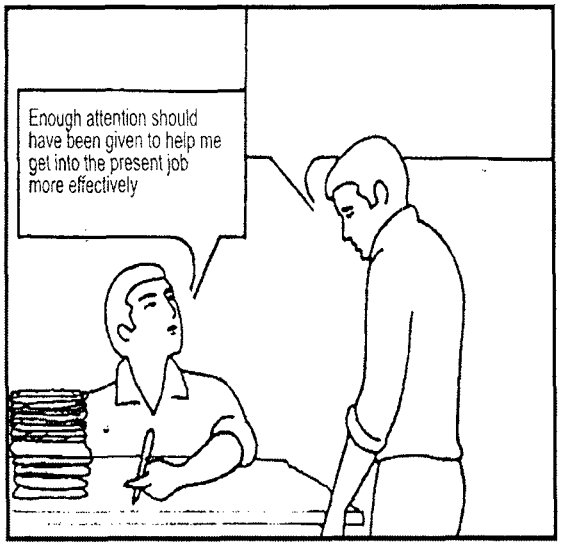

I just don't get enough time to spend with my family and friends.


You do not get enough resources to do a good work on your job.


They have taken away some important functions from your role, and have given those to other roles.


Too many people expect too much from me.


It is not clear what I am supposed to do on my job.


Enough attention should have been given to help me get into the present job more effectively


I just don't have an opportunity to interact with other roles.


I wish your job would help you to use your special training.


Your family is disappointed and feel deprived of your attention because of your busy job.


I wish I had higher level of expertise on this job.

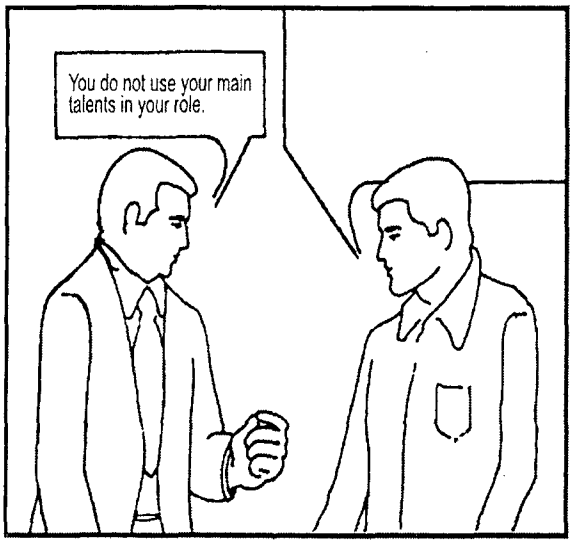

I would like to work on many more functions than are contained in my job.


I know you are already over-burdened, but I am afraid you will have to do this assingment also


I You are not clear about the requirements of your job.


You are not yet ready to take higher responsibility


You do not have closer relations with other roles in the organizations.


You do not use your main talents in your role.


You are too busy with your work and you do not have enough time for us.


You do not have the necessary technical knowledge and experience for the job.


I am afraid the specific function you wanted to perform has to be given to some other role.

Score Sheet for Role Pics

Name Sex Age Date

Role Organisation

Item Scores

Avoidance		Approach
1	D	
2	D	i
3	D	
4	D	
5		i
6		i
7	D	i
8	D	
9	D	i
10		i
11		i
12		i
13	M	
14	D	
15		i
16		o
17		i
18	D	
19	D	
20	D	
21	D	
22	D	
23	D	
24		E
GCR =	=	%

Profile

		Avoidance			Approach		
		Low Externality	High Externality		Low Externality	High Externality	
Low Internality	1	(M)	(E)		(m)	(e)	
	2						
	Σ						
High Internality	1	(I)	(D)		(i)	(n)	
	2						
	Σ						
Total		1 =	2 =	Σ	1 =	2 =	Σ

Trends	Styles
1.	Dominant
2.	Back up
3.	

Comments